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SHOCK AND REFRIGERATION

LYMAN WEEKS CROSSMAN, M.D.
and
FREDERICK M. ALLEN, M.D.
New York

In war, problems of shock and trauma attain even more than their usual importance. A more general understanding of the newer ideas and methods may sometimes improve therapeutic results.

In 1939 Allen [1] proposed the theory of a dual mechanism in shock. The physical factor is evident in cases in which the edema of injured tissues withdraws sufficient fluid from the circulation to account for death, without an assumption of a toxic factor. On the other hand, severe shock can be fatal with a smaller local fluid extravasation, and the toxic explanation seems obligatory when death occurs after injections of plasma or other fluid have maintained an adequate circulatory volume at all stages. The desired direct proof of the toxic hypothesis has been furnished in the demonstration by the Chambers group [2] of circulating substances with vasoexcitor or depressor properties corresponding to the different stages of shock. The variable picture of shock may therefore be partly accounted for by varying proportions of these two factors in different cases, and the response to treatment may perhaps vary accordingly. The physical factor forms the basis of the prevailing treatments of shock, in which the fluid migration is compensated by fluid administration or, when possible, prevented by local pressure.

The first world war gave origin to the theory that fluid replacement must be in the form of plasma or an equivalent colloid solution and that crystalloid injections are harmful because of flushing additional plasma protein out of the circulation. Davidson and Underhill [3] having made no comparisons of the benefits of saline solution and plasma, the first contradiction of the universally accepted doctrine was furnished by animal experiments [4] proving isotonic solution of sodium chloride to be equal or superior to plasma for shock. This result was confirmed by some writers [4] but disputed by others, chiefly because of deficiencies in quantity or timing of injections or hemorrhagic or other complications in their experiments.[5] Using standardized burns in mice, Rosenthal [6] furnished convincing proof of the equal efficacy of plasma and equivalent quantities of sodium salts in noncolloid solution, also of plasma or serum administered by vein, stomach or peritoneum. Fox,[7] following and confirming Rosenthal, contributed analyses showing the origin of the protein of exudates to be from breakdown of injured local tissues, thus disproving the supposed essential role of plasma proteins.

The points of superiority of isotonic solution of sodium chloride over plasma, as stated by Allen,[1] are that it is more conveniently and abundantly available, is tolerated safely in larger quantities and passes most readily into the tissues to supply their specific need for fluid and salt. After six years this view has been accepted in an official memorandum,[8] which prescribes treatment of burns with larger volumes of fluid than could be supplied with due rapidity in the form of plasma even if it were available. The attempt, however, to distinguish the small fraction of fluid given in the form of plasma as serving "to restore blood volume and to treat shock" appears as an indefensible relic of the colloid theory. There was no difficulty in maintaining blood volume with salt solution in shock or burns.[9] Since the specific physical process in shock is the edema and exudation in injured regions, as just explained, the large volume of salt solution which supplies this need is the specific shock treatment. Also the latter half of the quotation implies that the only specific virtue for shock treatment is contained in the small amount of plasma protein, which is now known to be untrue. This wrong theory can sometimes lead to fatal results in practice, because the administration of plasma as emergency treatment in the critical collapse stage is encouraged, whereas the first disproof [10] of the doctrine of irreversibility of advanced shock was accompanied by the demonstration of better recovery with saline solution than with plasma in dogs dying from either tourniquet shock or burns.

Though ranking all sodium salts essentially on a par, Rosenthal and Fox gave a slight preference to the lactate especially as being least nauseating for oral administration. Among the errors of other authors

From City Hospital.

Paper published under the auspices of the Section on Surgery, General and Abdominal.

1. Allen, F. M.: Physical and Toxic Factors in Shock, Arch. Surg. **38**: 155-180 (Jan.) 1939; Theory and Therapy of Shock: Reduced Temperatures in Shock Treatment, Am. J. Surg. **60**: 335-348 (June) 1943; Excessive Fluid Administration, ibid. **61**: 79-92 (July) 1943; Varied Fluid Injections, ibid. **62**: 80-104 (Oct.) 1943.

2. Chambers, R.; Zweifach, B. W.; Lowenstein, B. E., and Lee, R. E.: Proc. Soc. Exper. Biol. & Med. (Oct.) **56**: 127-129, 1944, Surg., Gynec. & Obst. **80**: 593-608, 1945.

3. Davidson, E. C.: Sodium Chloride Metabolism in Cutaneous Burns and Its Possible Significance for Rational Therapy, Arch. Surg. **13**: 262-277 (Aug.) 1926. Underhill, F. P.: Ann. Surg. **120**: 367-376, 1944.

4. Katz, L. N.; Friedberg, L., and Asher, R.: Am. J. Physiol. **140**: 65-71, 1943. Scott, C. C.; Worth, H. M., and Robbins, E. B.: Comparative Value of Some Blood Substitutes Used for Treatment of Experimental Shock, Arch. Surg. **48**: 315-318 (April) 1944.

5. Details are given in another paper (Allen, F. M.: J. Internat. Coll. Surgeons, September-October 1945) and still more fully in a contemplated small monograph.

6. Rosenthal, S. M.: Pub. Health Rep. **58**: 513-522, 1429-1436, 1943; **59**: 637-658, 1944; **60**: 373-381, 401-419, 1945.

7. Fox, C. L.: Oral Sodium Lactate in Treatment of Burn Shock, J. A. M. A. **124**: 207-212 (Jan. 22) 1944. Fox, C. L., and Keston, A. S.: Surg., Gynec. & Obst. **80**: 561-567, 1945.

8. Harkins, H. N.; Cope, O.; Evans, E. I.; Phillips, R. A., and Richards, D. W., Jr.: The Fluid and Nutritional Therapy of Burns, J. A. M. A. **128**: 475-479 (June 16) 1945.

9. Allen,[1] Rosenthal.[6]

10. Allen (footnotes 1 and 5).

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are comparisons only of equal volumes of plasma and various salt solutions, whereas therapeutic instructiveness consists in comparing the optimal results obtainable with each material. Using the least complicated forms of shock and optimal quantities and timing, the results with plain saline solution were found superior [1] to the best obtainable with pure plasma, and the later claims of improvement by additions of bicarbonate, succinate, fumarate and so on constitute an interesting but unsettled question, owing to differences in methods.

Parenteral injections of nutrient substances may be helpful in the postshock period, but their general use during the shock crisis should be condemned. In rare instances of extreme malnutrition or desiccation a solution of glucose in water may supply food and fluid without contributing to a possibly dangerous excess of salt; but in advanced shock there is danger of increasing mortality by dilution of the vital electrolytes.[11] Also in average patients with shock of such severity as to preclude mouth feeding, the frequent advice to improve strength or assist liver function by adding glucose or amino acids to the saline injections implies an inadequate grasp of metabolic laws. Glucose excites a moderate and amino acids a pronounced rise of metabolism, entailing an increased tissue demand for oxygen in a condition in which anoxia is the chief danger and the blood is already loaded with products of incomplete combustion of these same substances. Such a patient needs a fall of metabolism to a minimum fasting level, the principle being the same as in the reduced temperature treatment.

The converse to fluid administration, introduced by Patey and Robertson [12] in England in 1941, consists in reduction of exudation by pressure of casts or elastic bandages applied to a local region from which shock originates. Benefits to the extent of saving life may be accomplished by this and by the corresponding method of chemical sealing or mechanical compression of burns. These methods have been so widely adopted and rightly approved that only a brief mention is necessary of incidental disadvantages, such as the pressure necrosis of poorly nourished tissues and incubation of bacteria by warmth and moisture. These defects have required modifications of the treatment of burns, and they may receive notice in the course of further experience with limb trauma.

The demonstration of the inhibition of shock by reduced temperature [1] was the first break in the universal tradition of warming shocked patients or their injured parts. The subsequent confirmations, cited elsewhere,[5] are so numerous and harmonious that the briefest summary may suffice here.

The treatment of shock by reduction of the general body temperature was originated by Temple Fay [13] in clinical observations begun in 1940 and first reported in a panel discussion in 1942. Though this report mentions extreme reductions of rectal temperature to about 90° F., the original case records show more frequently 94 to 96 F., and the latter represent the probable ideal temperatures according to the most recent animal experiments. The method is precisely opposite to the tradition of blankets, hot water bottles and electric light cradles. Light covers or mild cooling are used according to the environmental temperature. The rationale is clear, namely the reduction of exudation and probably of toxin formation, the more liberal blood supply to vital organs by constriction of superficial vessels, and especially the relief of anoxia by reduction of total metabolism. Therefore the cooling merely sustains or assists the slight hypothermia which is part of the natural reaction to shock, and it stops short of discomfort and especially shivering, which increase metabolism and aggravate shock. Both clinical and experimental observations now leave no doubt that the difference between high and low environmental or bodily temperatures can amount to the difference between life and death in shock.

The more radical refrigeration which can be applied to local regions has correspondingly powerful effects. It prevents pain and primary shock and thus can serve for operative anesthesia. Also, by temporarily arresting all local metabolism, it inhibits secondary shock and all local reactions to injury. Besides the reduction of the physical factor of exudation, there is halting of production and great diminution of absorption of all kinds of toxins, so that hypothermia is the only known treatment which can affect the toxic factor in shock. There is agreement in recent literature that these effects are sufficient to save life in suitable cases. In addition, the reduced temperature can augment the benefits and remedy the defects of the pressure treatment. Alone or combined with pressure, the cooling may range from near freezing in a crisis to the moderate degree obtainable by the wetting of thin dressings with water or alcohol or exposure to cool air or a fan current. There is no excuse for elevation of temperature in any shock treatment, and the need for cooling is increased by hot weather or a febrile complication.

The action of cold is unique in inhibiting not only pain, edema and shock but also tissue devitalization, infection and intoxication. The treatment therefore continues to find wider uses for conditions which frequently include shock but also emphasize these other properties.

The first clinical use, namely for operative anesthesia, was described [14] in 1937 but did not receive a large scale trial [15] until 1941. The reduction of mortality in poor risk amputation cases by avoidance of shock and various complications has become familiar through many independent reports. A few misapprehensions may be corrected by a reminder that prevention of hypotension by special measures during spinal or other anesthesia has no influence on secondary shock and that a shockless thigh amputation is impossible except under refrigeration. The ability of patients to enjoy full meals immediately before and after refrigeration operations is a small illustration of the difference from other methods. The exceptionally low mortality statistics of a few operators are prima facie proof that their class of patients were strong enough to withstand shock; and if they find reasons for preferring other anesthetics under these conditions, at least the saving of many formerly "inoperable" cases by refrigeration is now established by sufficient testimony.

A form of benefit which nobody has questioned is the checking of intoxication in infected gangrene. When operation must be deferred because of a moribund condition, refusal of consent or other causes, the simple packing of such an arteriosclerotic limb in ice often

11. Allen, F. M.: Theory and Therapy of Shock: Excessive Fluid Administration [1]; Varied Fluid Injections,[2] Rosenthal.[6]
12. Patey, H. D., and Robertson, J. D.: Lancet **1**: 780-782, 1941.
13. Fay, T.: Pennsylvania M. J. **46**: 332, 1943; Cooling in Shock, Correspondence, J. A. M. A. **121**: 1109 (March 27) 1943.
14. Allen, F. M.: Tr. A. Am. Physicians **52**: 189-194, 1937.
15. Crossman, L. W.; Ruggiero, W. F.; Hurley, V., and Allen, F. M.: Reduced Temperatures in Surgery, Arch. Surg. **44**: 139-156 (Jan.) 1942.

transforms the condition dramatically within one or two days. The gangrene itself is kept temporarily stationary but is never cured by refrigeration. The respite gained for improving strength may amount to several days or several weeks, but ultimately pain and progressive necrosis return. If permission for amputation is assured, a still more absolute control is obtained by a permanent tourniquet or by McElvenny's [16] plan of solid freezing in preparation for amputation at a higher level.

Closely related to this is the control of dangerous infections in limbs without arteriosclerosis. There is evidence that the chilling extends deeply enough to produce considerable effects on bacterial activity and toxic absorption, even without a tourniquet. The latter should be used in cases of expected amputation but not otherwise, and it should remain in place until after the amputation. The ice pack should extend all the way to the axilla or groin, to control invisible extensions of infection above the tourniquet. With or without a tourniquet, the purpose is usually a temporary arrest of an overwhelming invasion, affording an interval for building up resistance or for serum or other treatments. The most important infection of this class is gas gangrene, and here an added specific benefit seems promised by the high oxygenation of refrigerated blood and tissues, which should be particularly inimical to anaerobes, together with the control of pain, necrosis, bacterial multiplication and toxic absorption. Successful cases were known first to Temple Fay and later ones have been known to ourselves. The report by Ferguson [17] furnishes an example in naval service, and publication of other cases is expected.

Embolism of limb arteries has been treated with refrigeration only at a late stage in order to avert impending gangrene when weakness or cardiac or other complications contraindicated immediate operation.[18] Such a respite for as long as several weeks has sometimes been followed by successful amputation. The longest record was that of a woman who positively refused operation for six weeks and then died of coronary thrombosis, but usually a modified necrosis and intoxication supervene somewhat earlier in spite of the continuous packing in ice or bare ice bags. There has not been an opportunity to try refrigeration in the most favorable early stage.[19] As soon as complete blocking of a major limb artery is established, there can be no doubt of the harmfulness of heat and the benefit of cold. A very small proportion of such cases actually come to operation within the ideal period. It is a simple matter to have such a limb surrounded with ice, even on telephoned instructions. Whenever feasible, a tight tourniquet should be added, well above the arterial obstruction. The cold acts to control pain, preserve tissues and blood vessels and prevent further thrombosis and adhesion of thrombi. The tourniquet intensifies these effects, stops inadequate and injurious collateral circulation, halts the dangerous proximal extension of the thrombus and prepares for operation without other anesthesia. In this way the favorable period for embolectomy may conceivably be extended to a day or two and the results improved. Since postoperative warming in the hope of vasodilatation conduces to both thrombosis and necrosis, not always controllable by heparin, any warming should be kept proximal to the embolic region, and the distal part should be cooled moderately for a day or two.

This proposed use for fresh embolism is closely paralleled by the experiences with trauma, often including thrombosis. The usual purpose is the immediate control of pain and shock and the prevention of infection and necrosis for a long enough time to permit of other needed treatments and recovery. The first outstanding example was McElvenny's [20] case of a man moribund after amputation of both legs by a railway train, who by packing of the stumps in ice was enabled to respond to restorative measures and undergo successful operation after fifty-eight hours, the mangled tissues remaining perfectly fresh. Bowers [21] described arrest of gangrene in traumatic thrombosis cases in soldiers. The highest severity is represented in Mock's [22] cases of fractured pelvis with thrombosis of the iliac or femoral arteries, gangrene being prevented by refrigerating the legs for two or two and one-half weeks. In 1 case with complications of cerebral concussion, severe chest injury, ruptured urethra, infected large hematoma of the buttocks, pneumonia and empyema with rupture into a bronchus requiring emergency tracheotomy and subsequent rib resection, the recovery may be called unprecedented and there can be no question of the conclusion that an earlier thigh amputation would have been fatal. The longest record of preservation is the case of Ottaway and Foote [23] of a seaman on a destroyer, whose femoral artery and vein were severed by a shell fragment 6 cm. below Poupart's ligament and who was kept in good condition by refrigeration of the leg until amputation could be performed one month later. In all these reports it is made clear that amputation was successful far within the area of refrigeration, and a longer stump was saved than would have been possible in an emergency operation. The most important therapeutic principle established, however, is that with dangerous shock present or impending there should be no amputation, débridement or other limb operation that will add to the shock, since postponement is made safe by refrigeration.

The conservative value of refrigeration is shown in observations by I. W. Nachlas [24] of Baltimore, such as the following: A blast accident inflicted serious abdominal injuries, tore off one hand and mangled the other. Because of the severe degree of shock and the traumatism to the abdominal contents, immediate amputations might have been fatal. The stumps were packed in ice for two and one-half weeks before the general condition warranted reconstructive surgery. Then the amputation of one wrist was completed and the numerous fractures and lacerations of the other hand were repaired, the tissues appearing fresh and sound, with the result that the man can go through life with one hand nearly normal in function instead of "the horror of no prehensile limb."

Amputated parts can be preserved in the manner that has long been known for tissues in an ice box. An example of minor use in common daily practice was seen by one of us (L. W. C.) in a case of accidental ampu-

16. McElvenny, R. T.: Arch. Phys. Therapy **25**: 599-602, 1944.
17. Ferguson, L. K.: U. S. Nav. M. Bull. **43**: 697-706, 1944.
18. Crossman, L. W., and Hurley, V.: J. Internat. Coll. Surg. **5**: 171-173, 1942.
19. Allen, F. M.: J. Internat. Coll. Surg. **7**: 423-434, 1944. Footnote 5.
20. McElvenny, R. T.: Surg., Gynec. & Obst. **73**: 263-264, 1941.
21. Bowers, W. F.: Mil. Surgeon **93**: 289-294, 1943.
22. Mock, H. E., and Mock, H. E., Jr.: Refrigeration Anesthesia in Amputations, J. A. M. A. **123**: 13-17 (Sept. 4) 1943. Mock, H. E., and Tannehill, E. H.: Surg., Gynec. & Obst. **78**: 429-433, 1944.
23. Ottaway, J. P., and Foote, J. F.: U. S. Nav. M. Bull. **43**: 1041-1043, 1944.
24. Nachlas, I. W.: Personal communication to the authors.

tation of the terminal phalanx of a man's thumb, the severed part hanging only by a shred of skin. Distance prevented surgical care for four hours, but meanwhile on telephoned instructions the hand was kept in iced saline solution. Suturing then was followed by healing. The most extreme illustration is the experimental amputation of dogs' legs by Blakemore and his co-workers,[25] the preservation of the legs in a refrigerator for twenty-four hours and their final surgical restoration in position and function. All the reports in the several preceding paragraphs furnish a sufficient answer to the occasionally expressed fear that tissues may be damaged by refrigeration for brief periods, with or without circulation. The exquisitely perfect preservation demonstrated by the Blakemore group, who were unacquainted with Allen's original preservation experiments, furnishes the most complete confirmation of these experiments and disproof of the injurious effect which has been deduced from Brooks and Duncan's experiments.[26]

The so-called crush injury has received most study in England, where refrigeration has become part of the routine treatment. A tourniquet should be used only if operation is contemplated. In addition to ordinary shock, the existence of a special toxin in such cases is recognized. Cold (with or without pressure) can assist in reducing pain and edema, preserving endangered tissues and restraining infection, besides serving as a shockless operative anesthetic when necessary.

The vasoconstrictor influence of cold is sometimes feared in connection with the occasional arterial spasm in these and other forms of trauma. Nerve blocking with procaine does not always release the supposed reflex. Since refrigeration anesthetizes both nerves and protoplasm, it should theoretically release arterial spasm even when procaine fails.[27] Evidence is the noticeably full blood flow in stumps after ordinary amputations under refrigeration.

The fact that the necrosis following severe freezing is secondary to thrombosis rather than a direct killing effect of cold is the basis of a new treatment[28] in which heparin administration for three or four days brings about healing instead of sloughing. It may be necessary to thaw frozen parts to only a few degrees above freezing in order to prevent both thrombosis and necrosis in the interval before heparin can be obtained. In other respects the use of prolonged moderate cooling remains as part of the standard treatment for the neurovascular sequels of both frostbite and immersion foot.[5]

The unique simultaneous inhibition of pain, shock, exudation, infection, necrosis and intoxication recommends refrigeration as an ideal treatment for burns,[29] which can also be combined with other treatments as desired. Plunging into cold water or applying ice not only gives the quickest emergency relief of pain and inflammation but also reacts most favorably on the later course. The notable case of Kross[30] illustrates two features: First, an existing infection and intoxication can be controlled by radical refrigeration in the same rapid manner as in gangrene, far superior to any possibilities of drugs. Without cleansing or débridement, the burned area is covered with a single layer of petrolatum gauze and then with ice, ice bags or apparatus. Second, the temperature after the first few days of crisis is gradually raised as high as possible without bringing return of symptoms, which in Kross's case signified skin temperatures around 60 F. for the greater part of eleven weeks. Duplication of these results requires mastery of the technic, which is rather difficult with ice but simple with the thermostatically regulated apparatus. The method is then labor saving by eliminating careful asepsis, and it is believed to offer the best control of shock and postshock intoxication and infection, the best comfort and nutrition without opiates and maximum ultimate saving of tissue.

The effective relief of sprains by superficial chilling with ethyl chloride[31] can presumably be equaled by ordinary refrigeration, with the advantage of deeper penetration if desired. Anesthesia by refrigeration without a tourniquet, preferred by some surgeons[32] for gangrene amputations, can serve for plastic and other superficial operations in nonsclerotic cases. Thus Mock[33] uses it for taking skin grafts, and Webster[34] preserves the grafts for days or weeks with cold. If there is objection to prolonged tourniquet application for stopping hemorrhage or for operative purposes, releasing the tourniquet at intervals during refrigeration still permits of perfect anesthesia, as observed by Gratz in orthopedic operations.[35] Evidence in favor of ice application as part of the routine treatment of snake bite and of all envenomed bites and stings[27] is the protracted absorption of penicillin from chilled areas[36] and the protection of rabbits from lethal quantities of mustard gas.[37] Further important uses of refrigeration await only opportunities for research, which has not been encouraged by authorities in this country.

It is obvious that the uses described have wide applications in military surgery,[38] and lives and limbs could have been saved if instructions and equipment had been provided earlier. The arbitrary dictum that refrigeration is not feasible near the fighting fronts has been answered by the actual use even with improvised apparatus. The necessity is greatest in the tropics, because of the harmful influence of heat on shock and wounds, and forthcoming publications are expected to demonstrate the benefits derived from the method in the recent Pacific campaigns. This paper is written largely with a view to wider military information and adoption.

CONCLUSIONS

Experimentation during the past six years has revolutionized the treatment of shock by substituting temperature reduction for the previous practice of warming, and replacing the former colloid or plasma concept with fluid therapy chiefly in the form of large volumes of salt solution.

Many forms of trauma can be benefited by the unique power of cold to control simultaneously pain,

25. Blakemore, A. H.; Lord, J. W., Jr., and Stefko, P. L.: Ann. Surg. **117**: 481-497, 1943. Blakemore, A. H., and Lord, J. W., Jr.: Nonsuture Method of Blood Vessel Anastomosis, J. A. M. A. **127**: 685-691 (March 24); 748-753 (March 31) 1945.
26. Allen, F. M.: Arch. Phys. Med. **26**: 92-98, 1945; footnote 35.
27. Allen, F. M.: Am. J. Surg. **68**: 170-184, 1945.
28. Lange, K., and Boyd, L. J.: Paper read at meeting of New York Academy of Medicine, May 16, 1945. Loewe, L.; Lange, K., and Rosenblatt, P.: Paper read at meeting of New York Academy of Medicine, May 16, 1945.
29. Allen, F. M.: Canad. M. A. J. **51**: 220-226, 1944; footnote 27.
30. Kross, I.: Low Temperature Therapy for Preservation of Limbs, J. A. M. A. **128**: 19-20 (May 5) 1945. Safford, F. K., and Nathanson, M. B.: Clinical Observations on Tissue Temperatures, Arch. Surg. **49**: 12-22 (July) 1944. Crossman, L. W., and Allen, F. M.: S. Clin. North America **25**: 361-370 (April) 1945.
31. Bingham, R.: Mil. Surgeon **96**: 170-174, 1945.
32. Cayford, E. H., and Pretty, H. G.: Ann. Surg. **121**: 157-163, 1945.
33. Mock, H. E., Jr.: Refrigeration Anesthesia in Skin Grafting, J. A. M. A. **122**: 597-598 (June 26) 1943.
34. Webster, J. P.: Ann. Surg. **120**: 431-449, 1944.
35. Allen, F. M.: Anesth. & Analg. **24**: 51-65, 1945.
36. Trumper, M., and Hutter, A. M.: Science **100**: 432-434, 1944.
37. Yudin, S. S.: Am. Rev. Soviet Med. **2**: 4-13, 1944.
38. Calver, G. W.: U. S. Nav. M. Bull. **42**: 358-380, 1944.

shock, exudation, infection, necrosis and formation and absorption of toxins. Specially important applications are to the treatment of burns and military surgery in general.

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ABSTRACT OF DISCUSSION

DR. TEMPLE FAY, Philadelphia: Drs. Crossman and Allen have done splendid work in the development of the shock prevention method of amputation surgery by means of refrigeration. This is but one aspect of the new field that awaits exploration. When one realizes that a human being can now be maintained for days at a body temperature 20 degrees F. below the normal level, the magnitude of this new field and its possibilities becomes apparent. A new physiology of tissue response awaits adequate investigation. Contrary to expectations, generalized refrigeration was not complicated by pneumonia in our series, in which low body temperatures were maintained for twenty-four hours or longer. Pneumonia and cardiac failure are two dangers to be properly evaluated. I have been impressed, however, with 2 instances in which bronchopneumonia appeared promptly when patients were subjected to a short period of inadequate refrigeration lasting two to four hours without reduction of general body temperature below 97 F. Only the devitalizing effects of ordinary overexposure is produced by such partial procedures. General refrigeration of body temperature should be done quickly and efficiently, reducing general temperature until 94 to 92 F. is reached, after which the patient can, if necessary, be maintained for five to seven days without further serious difficulty and little danger. The blood pressure, pulse and respiration must be observed and a close watch on temperature is required, as patients may slide down to lower levels quickly and without warning; 75 F. rectal is the lowest temperature I have noted in the human being compatible with recovery to normal temperature levels again. As body temperature is reduced to subnormal levels, more oxygen is held in solution in the blood, body tissue fluids and the cells themselves. Cellular metabolism is reduced by cold, and oxygen need is thus further curtailed. Satisfactory clinical improvement usually follows. A portion of the mechanism of shock is due to anoxia. Increased permeability of the capillaries to fluid may be due to lack of oxygen. Fluid lost to circulation gives rise to rapid pulse, low pulse pressure and symptoms of so-called shock that require prompt restoration of blood volume. The vasospastic drugs (posterior pituitary, epinephrine, ephedrine, ergot) are more effectual when the oxygen content of the blood is adequate and the temperature of the body is not permitted to become elevated. I have found that free administration of oxygen or an oxygen tent, if possible, is most desirable during the early period of treatment. Reduction of the entire body temperature by methods of refrigeration favors vasoconstriction, has sedational value and lowers respiratory and cardiac rates.

DR. HARRY E. MOCK, Chicago: In approximately fifty major amputations under refrigeration that I performed or were done by others at my instigation, not a single case of shock has been recorded. Recently, both lower legs were amputated just below the knees of a man aged 22 because of congenital deformities. The patient continued to talk and even laugh as first one leg and then the other was removed under refrigeration anesthesia. Blood pressure readings varied 5 points throughout the operations. Neither blood transfusions nor stimulants were used postoperatively. Under any other anesthesia the fear of shock would have ruled out the removal of the two legs at one time. I welcome this opportunity to express my deepest appreciation to Fred Allen and his co-workers for teaching me to use refrigeration.

DR. LYMAN WEEKS CROSSMAN, New York: Dr. Fay has unfortunately not received the necessary aid for developing his pioneer discovery of "artificial hibernation" of mammals and man. In its practical application to this large subject of shock, the optimal rectal temperatures may possibly differ in man and animals and should be further established clinically by experts such as Fay. Until then, moderate temperature reductions appear most conservative for clinicians in general, but the essential point is that they must be brought about by Fay's method, which reduces metabolism with avoidance of discomfort and shivering, which cause increased metabolism and exhaustion. In local refrigeration we had the inestimable advantage of rapid confirmations and developments by numerous writers, and the most dramatic benefits in otherwise hopeless cases were shown in Mock's reports. In contrast to the rapid adoption by independent surgeons was the slowness of recognition of both refrigeration and saline therapy by the "organized" research authorities, to which rather than to the armed services themselves the delayed military use of these methods must be attributed. Great numbers of lives and limbs were unquestionably sacrificed by the official adherence to warming methods and pure plasma infusions, in defiance of contrary proofs published from 1937 to 1939; and the partial reforms introduced very late in the war were due strictly to the initiative of individual medical officers. These clear facts are pertinent to the current propagandistic claims that centralized control of medical research and practice will hasten the making and adoption of discoveries.

DR. FREDERICK M. ALLEN, New York: Dr. Crossman will express the appreciation of both of us for the aid and kindness received from Dr. Fay and Dr. Mock. I wish to add only a brief reference to two developments which have come into prominence since this paper was written. While reports continue to be published showing the treatment of wounded soldiers with plasma, scientific evidence accumulates against plasma except as an inferior blood substitute and in favor of whole blood for hemorrhage and whole blood or preferably defibrinated blood (or saline suspension of red cells) for corpuscle deficits in shock. Saline therapy is advanced by various innovations, such as the replacement of isotonic solution of sodium chloride or other isotonic solutions with hypotonic solutions (e. g. 0.48 per cent sodium chloride or 0.38 per cent sodium chloride with 0.11 per cent sodium bicarbonate), for more normal bodily hydration without excessive salt retention. The curative values in shock, with its specific tissue demand for sodium, seem to be not yet finally established in comparison with various more concentrated mixtures (Moyer, C. A., and others: *Ann. Surg.* **120**:367 [Sept.] 1944. Coller, F. A., and others, *ibid.* **122**:663 [Oct.] 1945. Abbott, W. E., and others, *ibid.*, p. 678). Because of the probability that the liver plays a vital role in shock and the character of its blood supply makes it specially vulnerable to circulatory failure and anoxia, it may be hoped that the demonstrated benefits of arterial blood from a normal dog cross transfused into the splenic vein of a shocked dog may represent one of the most brilliant contributions to the theoretical understanding of shock (Fine, Jacob; Frank, H. A., and Seligman, A. M., *ibid.*, p. 652).

Pathology of the Spinal Cord as a Result of Trauma.—Injuries of the spinal cord present a slightly different pathologic picture than those of the brain. As is well known, the brain is enclosed in a rigid and practically unyielding skull, whereas the spinal cord, owing to a greater amount of free space between itself and the vertebral column, is usually allowed more mobility than the brain. The injuries of the spinal cord may result from fractures and dislocations, direct or indirect blows to the vertebral column such as falls, stabs, gunshot wounds, bomb and shell explosions, violent muscular strains and sudden changes in atmospheric pressure as in caisson disease. The pathologic changes in the cord depend on the type, extent and mechanism of the injury to the vertebral column, the spinal cord, its membranes and roots. The essential pathologic picture may be that of concussion, contusion or compression, each alone or in combination. In either type of injury, more so, however, in contusions, there may also occur lacerations, hematorachis and hematomyelia.—Davison, Charles: Pathology of the Spinal Cord as a Result of Trauma, in Trauma of the Central Nervous System, Baltimore, Williams & Wilkins Company, 1945.

THE TREATMENT OF CIRRHOSIS OF THE LIVER WITH CHOLINE AND CYSTINE

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The treatment of cirrhosis of the liver was largely symptomatic until the past few years, when experimental studies on the etiology of cirrhosis offered the first intelligent approach to the treatment of this disease. The latest developments in the experimental studies indicate that nutritional factors are important in causing hepatic injury and that there may be prevention of this pathologic process by the proper change in the composition of the experimental diet.

In the experimental studies [1] by the various groups of investigators there is complete agreement that an inadequate amount of casein in the diet is the determining factor which causes hepatic injury consisting of fatty infiltration and degeneration, necrosis and cirrhosis. This effect of casein is explained on the basis of a lipotropic action.[2] It is generally believed [2] that this is in direct proportion to its content of methionine, which has been found to prevent experimental dietary hepatic injury when given in adequate amounts.

In addition to methionine there are other substances, choline and cystine, which are concerned in the problem of experimental hepatic injury. There is good evidence [3] that cystine administered in sufficient amounts may aggravate or cause hepatic injury, whereas choline [1] protects the liver from injury, especially from fibrosis, but has no effect on necrosis. There is some difference of opinion as to the mechanism of this action. György and Goldblatt [4] found that choline was more effective when administered with cystine, and they pointed out that in the experimental studies in which choline alone prevents hepatic injury the diets contain a certain amount of cystine.

In view of the effectual prevention of experimental hepatic injury by the combined administration of choline and cystine, the present clinical study was undertaken for the purpose of evaluating the importance of choline and cystine in the treatment of cirrhosis of the liver.

Wyeth Incorporated, Philadelphia, supplied the choline and the cystine used in this study.

Drs. Harry Goldblatt, Paul György and Richard M. Johnson gave their interest and advice.

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From the Department of Medicine, Western Reserve University School of Medicine, Lakeside Hospital and Cleveland City Hospital.

Dr. Helena Hoelscher, the medical resident staff of Cleveland City Hospital and J. Wade Price, assistant professor of pathologic chemistry, Western Reserve University School of Medicine, and his staff gave their interest and cooperation in this study.

1. Webster, Graham: Dietary Liver Disease in Rats, J. Clin. Investigation **20**: 440 (July) 1941. Blumberg, Harold, and McCollum, E. V.: Prevention by Choline of Liver Cirrhosis in Rats on High Fat Low Protein Diets, Science **93**: 598 (June 20) 1941. Lillie, R. D.; Daft, F. S., and Sebrell, W. H.: Cirrhosis of Liver in Rats on Deficiency Diet and Effect of Alcohol, Pub. Health Rep. **56**: 1255 (June 13) 1941. Daft, F. S.; Sebrell, W. H., and Lillie, R. D.: Production and Apparent Prevention of Dietary Liver Cirrhosis in Rats, Proc. Soc. Exper. Biol. & Med. **48**: 228 (Oct.) 1941. Lowry, J. V.; Daft, F. S.; Sebrell, W. H.; Ashburn, L. L., and Lillie, R. D.: Treatment of Dietary Liver Cirrhosis in Rats with Choline and Cystine, Pub. Health Rep. **56**: 2216 (Nov. 14) 1941. György and Goldblatt.[4]

2. Best, C. H., and Ridout, J. H.: Choline as a Dietary Factor, in Luck, J. M.: Annual Review of Biochemistry, Stanford University, Calif., Annual Reviews, Inc., 1939, vol. 8, p. 349. Best, C. H., and Lucas, C. C.: Choline Chemistry and Significance as a Dietary Factor, in Harris, R. S., and Thimann, K. V.: Vitamins and Hormones, New York, Academic Press, Inc., 1943, vol. 1, p. 1.

3. Earle, D. P., Jr., and Victor, Joseph: Cirrhosis of the Liver Caused by Excessive Dietary Cystine, J. Exper. Med. **73**: 161 (Feb.) 1941, and articles referred to in footnote 1.

4. György, Paul, and Goldblatt, Harry: Experimental Production of Dietary Liver Injury (Necrosis, Cirrhosis) in Rats, Proc. Soc. Exper. Biol. & Med. **46**: 492 (March) 1941; Observations on the Conditions of Dietary Hepatic Injury (Necrosis, Cirrhosis) in Rats, J. Exper. Med. **75**: 355 (April) 1942.

In this study only patients with cirrhosis of the liver who had ascites were selected. A group of 20 patients received from 1.5 to 3 Gm. of choline and the same amount of cystine daily divided into three doses for periods of one to five months. They were given a high protein and low fat diet which consisted of approximately 110 Gm. of protein (derived from meat, vegetables and dairy products), 50 to 70 Gm. of fat and 250 Gm. of carbohydrates supplemented with 30 to 45 Gm. of brewers' yeast daily.

Because of the manner in which these patients responded to the treatment they have been divided into two groups, one consisting of 12 patients in whom the livers were not enlarged and a second group of 8 patients who had large livers. The clinical determination of the size of the liver is subject to a certain amount of error. However, in this study, in which only the patients with large palpable livers were classified as having large livers and all of the others were considered to have livers which were not enlarged, the error is negligible.

A control group of 15 patients with large liver and ascites who had received the same diet and medication except for the choline and cystine were included in this study. The reason for selecting patients with large livers for comparison was the fact that only the patients with large livers in the treated group showed any evidence of improvement from treatment with choline and cystine.

The three groups of patients are much alike in every respect, as shown in table 1. They are in the same age group. The duration of the disease before treatment was much the same. The incidence of alcoholism was high in all of the groups, ranging from 83 to 87 per cent. Arsenic appeared to be the etiologic factor in 1 patient of the treated group who had taken solution of potassium arsenite intermittently for a long time. Jaundice was present in half of the treated groups and in 6 of the 15 in the control group. The patients of all three groups had advanced liver failure, evidenced by clinical signs and by the low serum albumin concentration.

As already mentioned, there was observed early in the course of the study a striking difference among the patients in the manner in which they responded to the choline and cystine. It was discovered that patients with large livers showed signs of improvement, while patients who had livers which were not enlarged exhibited no evidence that the course of the disease had been changed. The first 2 patients who were treated happened to have livers which were not enlarged. They received 1.5 Gm. of choline and 1.5 Gm. of cystine daily. One patient, who had the medication for fifty days, died on the fifty-ninth hospital day. An autopsy revealed a cirrhotic liver which weighed 1,060 Gm. The second patient was treated for sixty days and died on the sixty-eighth hospital day. It was then decided to increase the dose to 2 Gm. This dose was given to 14 patients, 8 of whom had large livers. Seven of the 8 showed evidence of clinical improvement. One died on the thirty-eighth hospital day after receiving choline and cystine for twenty-six days. An autopsy showed that the patient had cirrhosis of the liver and acute nephrosis. None of the 6 patients with livers which were not enlarged lived more than seven months after their first admission to the hospital. One patient died

at the end of three weeks of a ruptured esophageal varix, and 5 died of liver insufficiency. Four died within a period of four months, and 1 lived seven months. An additional group of 4 patients with livers which were not palpable was given a trial of treatment with a larger dose, 3 Gm. daily. One patient received this amount for five months and another for four months, without any apparent effect. One of these patients lived for one and one-half years, and the others died within a period of six months. Four necropsies were done in this group of patients. The livers weighed from 900 to 1,650 Gm. and the microscopic examinations were characteristic of Laënnec's cirrhosis except in 1 case, in which the anatomic diagnosis was postnecrotic cirrhosis.

In the group of patients who showed signs of clinical improvement, the first indication of response to the choline and cystine was a diuresis which began about two weeks after the medication was started. At first the diuretic effect was very slight, but it gradually increased until at the end of a month a negative water balance existed. At the end of two months ascites was not demonstrable and the livers were much smaller. The serum albumin showed a definite rise in most of these patients after a month of treatment from an average of 2.47 Gm. per hundred cubic centimeters to 3.08 Gm. per hundred cubic centimeters. At the end of three months the serum albumin ranged from 3.4 Gm. per hundred cubic centimeters to 4 Gm. per hundred cubic centimeters in all of the patients except 1, in whom the level never exceeded 2.86 Gm. per hundred cubic centimeters during a five month period of treatment. However, his ascites disappeared and the liver became smaller. The cephalin-cholesterol flocculation test became negative in only 2 patients, 1 at the end of a month and another after a period of a year.

Although none of the 7 patients showed any clinical signs of a return of liver failure, 1 of them died of a ruptured esophageal varix at the end of one and one-half years. A second patient died of bronchopneumonia after a similar lapse of time. The remaining 5 patients were enjoying good health at the time this report was completed.

The following 2 reports will serve to show how the clinical course of cirrhosis of the liver was altered by choline and cystine in the patients with large livers:

R. C., a white man aged 44, a bartender, entered the hospital because of swelling of his abdomen and feet for a period of two months. Six months prior to his admission he had experienced some nausea and indigestion at times. Two weeks before admission he had lost his appetite and had lost weight. He had drunk 1 to 2 pints of whisky a day for a period of several years. The principal physical findings were slight icterus, ascites, large liver and spleen, edema of the legs and feet, red blood cells 4.9 million, hemoglobin 90 per cent, white blood cells 12,000, cephalin-cholesterol flocculation test 3 plus, icterus index 20, serum albumin 2.4 Gm. per hundred cubic centimeters and globulin 3.2 Gm. per hundred cubic centimeters.

For three months the patient was given a high protein and low fat diet. The diet consisted of 110 to 120 Gm. of protein, 50 to 70 Gm. of fat and 250 Gm. of carbohydrates supplemented with 45 Gm. of brewers' yeast daily. How much he ate of the prescribed diet is not known, since no weigh back was done. It was estimated that he consumed less than half. During this time he had four abdominal taps and received mercurial diuretics. He showed no clinical evidence of improvement at the end of three months, following which he was given 2 Gm. of choline and 2 Gm. of cystine daily. Shortly after the choline and cystine were started there was a definite improvement in appetite. At the end of two weeks there was an increase in the amount of urine, and it gradually increased until he had a negative water balance at the end of three weeks. One month after medication was started the serum albumin was 2.8 Gm. per hundred cubic centimeters and globulin 3.5 Gm. per hundred cubic centimeters; at the end of three months the serum albumin was 3.9 Gm. per hundred cubic centimeters and globulin 3 Gm. per hundred cubic centimeters, at which time the liver was palpable just below the costal margin and there was no evidence of ascites. His serum albumin was 3.8 Gm. per hundred cubic centimeters and globulin 2.6 Gm. per hundred cubic centimeters at the end of a year. He has continued to be in good health after a period of two years.

This case represents an instance in which choline and cystine appeared to supply the factors necessary to reverse the process in the liver. They could not be supplied by diet alone because the patient was not able to tolerate large amounts of food. In instances of this kind the choline and cystine are comparable to vitamin concentrates, which are often necessary in addition to diet in the treatment of certain deficiency diseases.

TABLE 1.—*A Comparison of the Clinical Data of the Treated Groups with the Control Group*

	Patients Treated with Choline and Cystine		
	Livers Not Enlarged	Livers Enlarged	Control Group
Number of patients	12	8	15
Average age	49	48	50
Sex: Male	10	8	12
Female	2	0	3
Duration of disease before treatment	2 months to 5 years	6 weeks to to 2 years	4 weeks to 2 years
Alcoholism	10	7	13
Jaundice	6	4	6
Average serum albumin	2.56 grams per 100 cc.	2.47 grams per 100 cc.	2.74 grams per 100 cc.
Average serum globulin	3.9 grams per 100 cc.	3.47 grams per 100 cc.	4.01 grams per 100 cc.
Cephalin-cholesterol flocculation test			
Positive	10	8	
Negative	2	0	

F. K., a man aged 51, entered the hospital because of abdominal swelling of three months' duration. He had been a heavy drinker of alcoholic beverages all his life. For about a year he experienced some nausea and poor appetite and had lost considerable weight. Three months before admission he noticed some swelling of his abdomen and edema of his feet. The swelling gradually increased until he entered the hospital. The chief findings were evidence of weight loss, slight icterus, edema of the legs and lower part of the back, ascites, large liver, red blood cells 3.82 million, hemoglobin 70 per cent, white blood cells 6,350, serum albumin 1.9 Gm. per hundred cubic centimeters, globulin 3.8 Gm. per hundred cubic centimeters and cephalin-cholesterol flocculation test 4 plus.

He was given a high protein, low fat diet and 45 Gm. of brewers' yeast daily. After three and one-half months of this regimen no change in his clinical condition was seen. It was necessary to do abdominal taps every week or ten days, and serum albumin remained at the same level. Choline and cystine 2 Gm. daily were added to this treatment. For the first month but little change was noticed. At the end of one month the serum albumin was 2.1 Gm. per hundred cubic centimeters and globulin 4 Gm. per hundred cubic centimeters. In the next two weeks the patient began to have diuresis, and at the end of two months no ascites was demonstrable. His serum albumin at this time was 3.5 Gm. per hundred cubic centimeters and globulin 4.9 Gm. per hundred cubic centimeters. He

appeared to be in good health for a period of one and one-half years, when he suddenly died of hemorrhage from a ruptured esophageal varix.

This case serves to illustrate that fibrosis cannot be altered by treatment. This patient, after making a good recovery from liver decompensation, died of hemorrhage from a ruptured esophageal varix the result of portal hypertension probably due to the fibrotic changes still present in the liver.

In order to estimate the effectiveness of the treatment with choline and cystine, a comparison was made with the control group of 15 patients previously mentioned. From the standpoint of survival, the difference between the patients with large livers treated with choline and cystine and the control group is quite striking. One patient of the treated group was dead at the end of one year, compared to 6 at the end of six months and 9 at the end of a year in the control group. Only 6 patients in the treated group have been observed as long as two years, at the end of which time 3 had died, compared to 10 in the control group (table 2). The results of the treatment are disappointing when the patients with livers not enlarged are included. Fifty-five per cent were living at the end of six months. At

TABLE 2.—*A Comparison of the Survival of the Choline-Cystine Treated Patients with the Control Group of Patients with Cirrhosis Treated with a High Protein, Low Fat Diet*

	Number of Patients	Survival Period		
		6 Months	1 Year	2 Years
Patients with livers not enlarged	12	4	1	0
Patients with large livers *	8	7	7	3
Control group	15	9	6	5

* Two patients of this group have been followed only one year.

the end of one year 40 per cent survived, and at the end of two years 16.6 per cent.

In the evaluation of any therapy for cirrhosis one must realize that spontaneous remissions sometimes occur, and there are stages of the disease at which the process is irreversible. There are no clinical signs or liver function tests which are of any help in detecting clinically when this stage has been reached. When these facts are taken into consideration it is quite apparent that it will be necessary to study large groups of patients in order to establish any definite conclusions as to the efficacy of a treatment.

In this investigation, in which only a small number of patients were studied, the possible merits of the combined administration of choline and cystine therapy for cirrhosis cannot be decided. However, the results which were obtained are sufficient to warrant further investigation of this form of treatment. In the group of patients with large livers the results are very encouraging when compared to the control group. Additional evidence for the efficacy of the treatment is that some of the patients improved with choline and cystine after they failed to respond to a high protein, low fat diet supplemented with yeast.

The difference noticed in the response to choline and cystine between the patients with large livers and those with livers not enlarged appears to be of considerable importance. It suggests that the size of the liver may give some indication whether the process can be reversed by treatment. It is generally agreed that, as the fibrosis increases, the liver becomes smaller and the possibility of obtaining a reversal of the process becomes less. On the other hand, the large cirrhotic liver in most instances contains more fat and less fibrosis. Fleming and Snell [5] found in their study that favorable results occurred in patients with large livers, and they expressed the opinion that the "cures" probably are to be expected among the patients who possess various degrees of fatty metamorphosis and degeneration without extensive periportal fibrosis. There seems to be general agreement that treatment is more effectual when there are fatty changes in the liver. However, other changes such as cloudy swelling and necrosis, which are characteristic microscopic findings in cirrhotic livers, may be altered by treatment.

Since the combined administration of choline and cystine was effective only in the patients with large livers where fatty changes were suspected, a lipotropic action of choline and cystine is the logical explanation for the results which were obtained. These results are what might be expected in view of the experimental studies [1] in which choline, the combination of choline and cystine, or methionine has been found to prevent the deposition of fat in the liver.

The only reference which can be found in medical literature as to the clinical use of choline and cystine in the treatment of human cirrhosis is that of Russakoff and Blumberg,[6] who report a personal communication from Gordon. He [7] observed striking improvement in 5 cases of alcoholic cirrhosis treated with a combination of choline and cystine. There are several clinical reports [8] in which choline in conjunction with a high protein, low fat diet and vitamin supplements appeared to exert a favorable influence in the treatment of cirrhosis.

The favorable results in the treatment of cirrhosis of the liver reported by Patek and Post [9] and by Fleming and Snell [5] with high protein diets and vitamin supplements must be attributed to certain factors in the proteins which arrest or reverse the process in the liver. On the basis of the present experimental studies choline, a combination of choline and cystine, and methionine are the only substances which are known to exert this action. There is a close analogy between cirrhosis of the liver and certain vitamin deficiency diseases in which diet alone may correct the condition when it can provide a sufficient amount of the deficient factors. However, when diet does not do this vitamin concentrates must be supplemented.

CONCLUSION

It is important to emphasize the limitations of the treatment of cirrhosis. Up to the present time there has been no treatment which has been found that alters

5. Fleming, R. G., and Snell, A. M.: Portal Cirrhosis with Ascites: An Analysis of 200 Cases, with Special Reference to Prognosis and Treatment, Am. J. Digest Dis. **9**: 115 (April) 1942.

6. Russakoff, A. H., and Blumberg, Harold: Choline as an Adjuvant to the Dietary Therapy of Cirrhosis of the Liver, Ann. Int. Med. **20**: 848 (Nov.) 1944.

7. Gordon, E. S., cited by Russakoff and Blumberg.[6]

8. Broun, G. O., and Meuther, R. O.: Treatment of Hepatic Cirrhosis with Choline Chloride and Diet Low in Fat and Cholesterol, J. A. M. A. **118**: 1403 (April 18) 1942. Barker, W. H.: The Modern Treatment of Cirrhosis of the Liver, M. Clin. North America **29**: 273, 1945. Wade, L. J.: Recent Advances in the Therapy of Cirrhosis of the Liver, ibid. **29**: 479, 1945. Russakoff and Blumberg.[6]

9. Patek, A. J., and Post, Joseph: Treatment of Cirrhosis of the Liver by a Nutritious Diet and Supplements Rich in Vitamin B Complex, J. Clin. Investigation **20**: 481 (Sept.) 1941.

fibrosis of the liver. Recovery of liver function therefore must depend on the arrest or reversibility of the other pathologic changes which are found in cirrhosis.

SUMMARY

1. Twenty patients with cirrhosis of the liver who had ascites were treated with a high protein, low fat diet supplemented by yeast and a combination of choline and cystine.

2. Twelve of the 20 patients with livers which were not enlarged showed no response to the therapy, whereas 7 of the 8 patients with large livers made a good recovery from liver decompensation.

3. A comparison of the treated group of patients with large livers with a similar group of 15 patients who were treated with only a high protein, low fat diet supplemented with yeast indicated that the combination of choline and cystine had a favorable influence in the treatment of cirrhosis.

4. The striking difference in the response of patients with large livers compared to patients with livers not enlarged suggests that the combination of choline and cystine is effective where fatty changes in the livers are suspected.

ABSTRACT OF DISCUSSION

DR. JAMES H. EDDY JR., Shreveport, La.: The importance of certain nutritional factors in the treatment of hepatitis appears to rest on good laboratory and clinical evidence. The sulfur containing amino acid methionine or cystine plus choline is apparently the essential factor. That either methionine or cystine plus choline has any advantage over the other is doubtful unless it is the simplicity of using one drug in place of two. My experience has been entirely with methionine, but results obtained with methionine could be expected to occur with cystine plus choline. My work has been neither as extensive nor as well controlled as Dr. Beams's has been, but the results seem to be roughly parallel. All of our late cases have been fatal in spite of treatment, although a definite if temporary improvement occurred in 1 case, in which a notable diuresis followed the administration of methionine; but death in coma took place within a few weeks. Of the 2 earlier cases only 1 is proved by microscopic study, but both are definite early cases of cirrhosis. Both of these patients had large livers and both have shown a good improvement, so that they have been able to return to their regular jobs, have become clear of jaundice and have good appetites. I believe that much more clinical work will be required to establish the place of these nutritional factors in the treatment of cirrhosis and that these patients must be followed for several years to determine how permanent this improvement will be. One thing seems certain, and that is that these patients must be treated early, as no medical management may be expected to relieve portal obstruction.

DR. NOLAN KALTREIDER, Rochester, N. Y.: Dr. Beams points out that it is quite difficult to evaluate the effectiveness of any one particular therapeutic agent in human beings with cirrhosis of the liver. The course of the disease is very variable and there are many factors that are beyond the control of the investigator. Even though the reported group of cases of cirrhosis of the liver treated with a mixture of choline and cystine is quite small, such clinical observations do serve well as pilot experiments. Pooling the results of such series from various clinics will make it possible in the near future to have a large enough series to apply statistical methods in an effort to evaluate the results. This study suggests that choline-cystine supplements are much more effective in cases in which the livers are enlarged by fatty infiltration or degeneration and by necrosis than in the stage in which the livers are small, presumably contracted by fibrous tissue. If this result is substantiated, it should be an important point in the prognosis of the disease. It would be of interest to know the dietary intake of the control group, for from the 2 cases reported in detail in the paper it appears that an adequate caloric intake was not possible prior to the administration of the supplements. Patek obtained very encouraging results in a group of patients with cirrhosis who were placed on a high protein, carbohydrate and low fat diet supplemented by large quantities of yeast. But he points out that in order to obtain such improvement it is necessary for the patient to receive a high caloric intake daily. In a small series of cases treated with a high protein, carbohydrate, low fat diet and with supplements of choline-cystine mixture of methionine, improvement (disappearance of symptoms, return of the electrophoretic pattern to normal and normal liver function) was observed provided the patients took an adequate caloric intake and reduced their alcoholic consumption. Whether or not these patients would have improved with an adequate diet without the supplements I am not prepared to say. The disease in one of the patients with large liver has continued to progress despite fairly large doses of choline-cystine mixture and methionine over a period of one year. This patient did not take the diet prescribed and he continued to consume large amounts of alcohol. On the other hand, another patient with almost identical findings is now clinically well with a reversion of the albumin globulin ratio to normal, a normal electrophoretic pattern and a normal liver function. The second patient has taken a high caloric diet and supplements and has abstained from the use of alcohol. These experiences with supplements of yeast powder, choline-cystine mixture and/or methionine, in addition to a high caloric diet and abstinence from alcohol suggest a very favorable prognosis for persons suffering from cirrhosis of the liver, especially those in the early stages of the disease before the pathologic process becomes irreversible.

DR. CHARLES L. HOAGLAND, New York: There are differences between the syndrome of chronic hepatic insufficiency accompanied by clinical signs of enlargement of the liver and the cirrhotic syndrome in which the liver is not palpable and therefore probably decreased in size. The prognosis is far better in the former type of cirrhosis, and it is in the group of patients who present signs of enlargement of the liver that by far the largest number of spontaneous remissions occur. It is in this group also that the best therapeutic results have been achieved with an adequate diet, rest, transfusions of blood, plasma and homologous albumin, and the administration of crude liver extract and vitamins. Incipient cirrhosis is characterized by fatty infiltration and enlargement of the liver. As the disease advances there is continued proliferation of connective tissue throughout the portal spaces of the liver, with eventual fusion and deformity of the hepatic lobules. In its final stages the disease process is associated with shrinkage in the size of the liver and a decrease in its total mass. Logically, therefore, the sooner rational treatment is begun in cirrhosis of the liver the greater are the chances that the course of the disease may be favorably influenced. If choline and cystine are truly helpful in the treatment of cirrhosis of the liver, but only in those cases which present signs of hepatic enlargement, success in the use of this type of therapy may well be due in a large measure to early initiation of treatment, including the prompt institution of adequate alimentation and good clinical care. If we are right in the supposition that chronic hepatic insufficiency is a multiple deficiency syndrome, it would be well to stress the use of adjuvant therapy of the most diverse type rather than to rely exclusively on one or more promising agents. Any measure which may be expected to relieve one or more of the metabolic defects arising in this complex syndrome should be included in the therapy of chronic hepatic insufficiency. Measures such as an adequate caloric intake, transfusion of blood, plasma and homologous serum albumin, and the administration of choline, the sulfur-amino acids, crude liver extract and the vitamins may be expected to contribute to some degree in raising the total metabolic efficiency of the liver and to play an important role in helping to check the processes at work in early cirrhosis of the liver, which, if uninfluenced, lead ultimately to a state of irreversible hepatic insufficiency and death.

DR. PAUL GYÖRGY, Philadelphia: The use of choline plus cystine, or of methionine, in the treatment of cirrhosis of the liver in man is based on results obtained in experimental animals in which hepatic injury (necrosis and cirrhosis) was produced by dietary means or after exposure to hepatotoxins. Methionine, or cystine plus choline, has a beneficial effect on both necrosis and cirrhosis, choline on cirrhosis, cystine in physiologic doses mainly on necrosis. These animal experiments were with few exceptions of prophylactic and not of therapeutic nature. It can be rightly questioned whether cirrhosis, with its massive fibrotic changes and destruction of normal architecture, will respond also therapeutically to dietary factors which determine its prevention. On the other hand, it should be borne in mind that cirrhosis is more than fibrosis and is usually associated with definite impairment of liver function. Failure to inactivate estrone is one of the manifestations of experimental dietary hepatic injury. It can be studied on living castrated female rats with pellets of estrone implanted in their spleen. Estrus appearing in such animals when kept for varying lengths of time on a cirrhosis producing ration can be suppressed by adding methionine or methionine-containing protein to the diet. This therapeutic effect of methionine and protein can also be demonstrated histologically by comparing sections of the liver taken by biopsy from animals that have been kept for a period of about one hundred and fifty days on a cirrhosis producing basal diet, with sections taken at autopsy of the same animals killed one hundred and fifty days after treatment. In addition to diet, endocrine factors appear to play an important role in experimental hepatic injury. It has been recently shown that estrone exerts a definite, although limited, protective effect on the liver on female rats fed a cirrhosis producing diet. Testosterone or methyltestosterone were without similar beneficial influence. In male rats exposed to carbon tetrachloride the survival time was shorter and parenchymatous changes, especially in the kidneys as part of the hepatorenal syndrome, were more evident than in identically treated female controls. Methionine has shown definite protective effect in both groups, relatively more pronounced in males. The protective effect of thiouracil in experimental hepatic injury might conceivably be regulated through the thyroid gland. It remains to be shown whether management of human cirrhosis of the liver will improve by combination of dietary and endocrine therapy.

DR. A. J. BEAMS, Cleveland: I agree with Dr. Eddy that choline and cystine have no advantage over methionine in the treatment of cirrhosis. In the past year I have employed methionine in the treatment of a group of patients with cirrhosis and hepatitis, and the results are similar to those obtained with choline and cystine. Dr. Kaltreider's inquiry as to the dietary intake of the patients in the control group cannot be answered, since the food they failed to eat was not estimated. They were given a high protein (approximately 110 Gm.) low fat and high carbohydrate diet (2,000 to 2,500 calories), which was the same diet employed in the group treated with choline and cystine. Since many of the patients who have cirrhosis with ascites are too sick to take an adequate diet, the report of good results in the treatment of cirrhosis with diet alone is surprising. Since Dr. Hoagland agrees that the best therapeutic results are obtained in the group of patients with large livers and fatty infiltration, it is difficult to understand why he doubts that a lipotropic substance such as choline plus cystine would not be helpful in the treatment of cirrhosis. I agree that there are evidences for multiple metabolic deficiencies in chronic liver insufficiency, and every measure which may relieve the metabolic defects should be employed. However, in cirrhosis, just as in many of the other deficiency diseases, there is good evidence of one factor being the essential cause of the disease, and the other metabolic defects are the result of the disturbed metabolism. This is especially true in the liver, where many metabolic processes occur. It is quite true that additional experimental and clinical evidence is necessary before it can be established that choline plus cystine or methionine is the essential nutritional factor that is required in the successful treatment of cirrhosis of the liver.

REACTION FOLLOWING BRONCHOGRAPHY WITH IODIZED OIL

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Severe or fatal reactions are relatively rare following instillation of iodized oil into the tracheobronchial tree. Information is furnished [1] that the Army Institute of Pathology has on file the protocol of only 1 case that might possibly be a fatal lipiodol reaction after intrabronchial instillation, and that case is the one reported herein. It is estimated [2] that about 300 bronchograms, representing some 200 individual patients, are performed yearly in the Section on Roentgenology of the Mayo Clinic. Nevertheless, according to Good, "there has never been a fatal accident following bronchography in the memory of any one, including myself, who has worked in this field at the clinic." Patients at the Mayo Clinic are not tested for iodine sensitivity prior to lipiodol bronchography unless they give a history of sensitivity to iodine. Among those patients who are sensitive to iodine, about six mild reactions occur each year, but all have been controlled without fatality. White and Bayliss [3] could find only 8 cases of severe reactions, 3 of them fatal, reported in the literature to time of writing (1943), and to these 8 cases they added 1 nonfatal case of their own.

They state that "no similar case has previously occurred in Sydney (Australia) following lipiodol bronchography. One of our radiological colleagues has made 2,000 lipiodol examinations of the bronchial tree with no untoward results." Scadding [4] had 2 cases of severe reaction to lipiodol (included in summary of literature by White and Bayliss), 1 of them fatal, and he states that "over 2,900 lipiodol examinations have been performed at this hospital without a previous serious accident from iodine sensitivity." Criep and Hampsey [5] circulated a questionnaire on the use of intratracheal iodized oil in bronchial asthma. Sixty-four of the physicians who replied had used iodized oil in examining 1,205 asthmatic patients and did not report a fatality. Ten other cases of severe reaction following lipiodol instillation can be found in the literature,[6] but no figures are given on the total number of uneventful lipiodol instillations represented by the ten severe reactions, five of which were fatal, five nonfatal. One of the patients who died [7] was a 13 year old girl, known to be asthmatic, who became cyanotic with weak pulse and died twenty hours after instillation of lipiodol. The autopsy findings were those considered typical of bronchial asthma. Another patient [8] died a few minutes after bronchoscopy with instillation of lipiodol, but since no details are given it is not possible to rule out some type of death other than iodized oil reaction, e. g. fatal reaction to local anesthetic. The other three

1. Personal communications to the author from Col. J. E., Ash, M. C., director, Army Institute of Pathology, Washington 25, D. C.
2. Personal communication to the author from C. Allen Good, Section of Roentgenology, the Mayo Clinic.
3. White, Bruce, and Bayliss, C. G.: Acute Iodism Following Lipiodol Bronchography, M. J. Australia **2**: 421 (Nov. 20) 1943.
4. Scadding, J. G.: Acute Iodism Following Lipiodol Bronchography, Brit. M. J. **2**: 1147 (Dec. 22) 1934.
5. Criep, L. H., and Hampsey, J. W.: Therapeutic Value of Iodized Oil in Bronchial Asthma, J. Allergy **9**: 23 (Nov.) 1937.
6. Macdonald,[7] Hansen,[8] Plehn,[9] Amberson and Riggins,[11] Jacobaeus, Selander and Westermark,[10] Pinchin and Morlock.[10]
7. Macdonald, I. G.: The Local and Constitutional Pathology of Bronchial Asthma, Ann. Int. Med. **6**: 253 (Aug.) 1932.
8. Hansen, Olga S.: Death from Asthma, Minnesota Med. **19**: 445 (July) 1936.

fatalities [9] are reported so briefly that one cannot form an adequate idea of the cause of death; and it cannot be certified that these deaths were reactions to iodized oil per se. The reactions in the 5 nonfatal cases [10] were diagnosed acute massive collapse of the lungs, but of course the actual pathologic condition can never be known. Amberson and Riggins [11] believe that the 4 cases of Jacobaeus, Selander and Westermark [10] were cases of pulmonary edema rather than atelectasis, but careful reading of the original report makes it appear that the cases actually fulfilled the clinical and x-ray criteria of pulmonary collapse and should be considered such.

It is significant, with regard to the factor of iodine sensitivity, that in the case reported by White and Bayliss [3] and in the nonfatal case reported by Scadding,[4] a previous instillation of iodized oil had been given without any reaction; also that no severe or fatal reactions to lipiodol have been observed at the Mayo Clinic to date, even in patients known to be sensitive to iodine.[2] Further, the patient of White and Bayliss gave a negative reaction to iodine when tested for sensitivity after the acute reaction had subsided, and Scadding's patient with a severe but nonfatal reaction had been taking iodide by mouth previous to the lipiodol injection but had not shown any symptoms of iodine sensitivity.

The types of reaction that may occur following use of iodized oil have not been found classified in the available literature. The reactions that are seen in the Mayo Clinic groups are classified as follows: [2]

1. Swelling of the parotid and submaxillary glands, beginning shortly after instillation of the oil and subsiding within twenty-four to forty-eight hours. This is the most common reaction, is seen three to four times a year, and occurs in patients without allergic history.

2. Asthma, occurring about once a year, always in persons who show other signs of allergy.

3. Urticaria, beginning almost immediately, not occurring over once a year and "probably on an allergic basis."

4. Skin eruption, papular or pustular, occurring ten to fourteen days after the instillation of the oil, similar to a drug eruption and not seeming to have an allergic basis.

Scadding [4] notes that he had had frequent mild reactions prior to the two severe ones, and these mild reactions were usually a transient coryza with lacrimation, and possibly mild urticarial or erythematous rashes, all passing off within a few days; while less frequently more severe rashes of an acute irritant and urticarial type occurred seven to ten days after injection; and headaches occurred rarely. All the cases reported in the literature primarily as reactions to lipiodol [12] have been classified as "acute iodism" and have been characterized by dermal lesions of a type described as hemorrhagic, bullous urticaria. The other reactions reported in the literature [6] either represent pulmonary reactions or are not described adequately to determine the exact type of reaction involved, and these cases are reported incidental to other subjects, such as various studies of asthma, diagnostic or pathologic, or studies of the use of iodized oil as a therapeutic agent in asthma.

9. Plehn, G. J., in discussion on Anderson, William: The Treatment of Bronchial Asthma by Intratracheal Injections of Iodized Oil, New York State J. Med. **36**: 1151 (Aug. 15) 1936. Amberson and Riggins.[11]

10. Jacobaeus, H. C.; Selander, G., and Westermark, N.: A Study of Acute Massive Atelectatic Collapse of the Lung, Acta med. Scandinav. **71**: 439, 1929. Pinchin, A. J. S., and Morlock, H. V.: Acute Massive Collapse of the Lung Following Lipiodol Injection, Brit. M. J. **1**: 930 (May 30) 1931.

11. Amberson, J. B., and Riggins, H. M.: Lipiodol in Bronchography, Am. J. Roentgenol. **30**: 727 (Dec.) 1933.

12. Goldstein, D. W.: Fatal Iododerma Following Injection of Iodized Oil for Pulmonary Diagnosis, J. A. M. A. **106**: 1659 (May 9) 1936. White and Bayliss.[3] Scadding.[4]

The following case is reported because it is believed to be unique as a case of fatal pulmonary reaction following instillation of iodized oil into the tracheobronchial tree, and caused by reaction to the iodized oil.

REPORT OF CASE [13]

History and Course.—A white man aged 41 was admitted to the hospital with the chief complaint of gastroenteritis. He had had abdominal pain for three days prior to admission and became nauseated on the day of admission. The past history was negative except for a note of occasional cough of apparently nonspecific nature. No history was taken about asthma specifically. Physical examination on admission was entirely normal except for a temperature of 101.8 F., pulse rate 104, respiratory rate 24 and slight tenderness in the gallbladder region. Laboratory studies on admission showed normal urinalysis, red cells 4.4 million, white cells 7,750 with 72 per cent neutrophils, 28 per cent lymphocytes and blood Kahn reaction negative. The signs and symptoms of gastroenteritis cleared within twenty-four hours, and then physical examination showed a few rales in each base and in the left upper chest posteriorly. On account of these rales, x-ray examination of the chest was ordered and the sedimentation rate of the blood was determined. The sedimentation rate was 26 mm. per hour (Cutler method). The x-ray was reported as showing some increase in lung markings throughout both lung fields, more definite in the right base, which had a honeycomb appearance which was somewhat suggestive of a bronchiectasis. The patient was referred to the eye, ear, nose and throat clinic for a lipiodol injection for visualization of the right lower bronchial tree. At 8:15 a. m. the patient was given 1½ grains (0.1 Gm.) of seconal by mouth, and at 8:45 a. m. the larynx was anesthetized with topical application of 3.5 to 4 cc. of 10 per cent solution of cocaine. A rubber tube was inserted into the trachea; the patient was taken to the x-ray room on a cart and 10 cc. of lipiodol was injected into the base of each lung. The x-ray examination was completed, the patient stated that he felt well and he was returned on a litter to his ward at about 10 a. m. He complained of some vague difficulty in breathing when he was first returned to the ward but didn't seem greatly troubled by it. He asked for some coffee and drank about a cupful without any apparent distress or difficulty. About twenty minutes later he had a severe generalized convulsion. An intravenous dose of 7½ grains (0.5 Gm.) of sodium amytal was given within one minute of the time of onset of the convulsion because the possibility of a cocaine reaction was considered. A few minutes later the patient became extremely cyanotic and stopped breathing. Artificial respiration was given for about thirty minutes, and he was pronounced dead at 11:20, about ninety minutes after cocainization of the throat and about seventy-five minutes after instillation of the lipiodol.

Autopsy.—This was performed one and one-half hours after death. The body was well developed and nourished, still warm, with slight but definite rigor of the extremities and a diffuse dependent lividity of mild degree. General external examination was not remarkable. The peritoneum and peritoneal cavity were normal. When the thoracic cage was opened, the left lung was found collapsed, filling only about one third of the chest space. The surface of the right lung was covered with dense fibrous adhesions which bound it tightly to the chest wall everywhere except over the apex and the base. When these adhesions were broken, the right lung immediately collapsed to the size of the left lung. The left lung weighed 300 Gm., the right lung 400 Gm. Both lungs, when removed, were noncrepitant, and except for the apex and base of the right lung the cut surface had the appearance of atelectatic lungs. The tracheobronchial tree was completely filled with thick, extremely tenacious mucus. This material was found plugging even the smallest bronchioles at the base of the lungs. The tracheobronchial mucosa was pink and velvety in appearance. The pulmonary vessels were patent and were free of thrombi or emboli. There was no gross evidence of tuberculosis in either lung or in the tracheobronchial lymph nodes. The right ventricle of the heart was dilated and

13. Army Medical Museum accession 126310.

filled with black fluid blood; the left ventricle was contracted and empty. The coronary arteries were normal and patent. The spleen, liver, gallbladder, adrenal glands, venae cavae and pelvic veins, pancreas, kidneys and genitourinary tract, scalp, skull, brain and cord were examined and found to be grossly normal. The stomach was contracted and contained only a small amount of brown, semiliquid material with a coffee-like odor. No oil was seen in the stomach. The remainder of the gastrointestinal tract was entirely normal.

Postmortem Laboratory Studies.—Urinalysis gave normal results throughout.

Chemical examination of the blood from the right ventricle revealed 363.6 mg. of sugar and 16.6 mg. of urea nitrogen per hundred cubic centimeters. The corresponding figures for blood from the aorta were 322.6 mg. and 12.8 mg. per hundred cubic centimeters.

3. The spinal fluid was clear and colorless, with 4 lymphocytes. The Pandy test was slightly positive. The Kolmer reaction was negative in all dilutions, sugar 69.9 mg. and chlorides 672.7 mg. per hundred cubic centimeters.

A smear of the bronchial mucus revealed a few cells, chiefly neutrophils and lymphocytes, with 1 per cent or less eosinophils. No organisms were present in gram stained or acid fast stained slides.

Microscopic Examination.—The trachea and main bronchi showed an occasional eosinophil infiltrating the mucosa and a moderate number of eosinophils together with an increased number of small round cells infiltrating the submucosa. The mucous glands showed evidence of activity, but only rarely was an eosinophil seen present immediately adjacent to the mucous gland units. The appearance of the intrapulmonary air passages showed great diversity. The bronchi and largest bronchioles had thickened, infolded mucosa, and the lumens were stenosed and filled with mucus in which were a very few lymphocytes and neutrophils but no eosinophils. The basement membrane was thickened and hyalinized. There was no cellular infiltrate in the submucosa or walls of these larger air passages. The smaller and terminal bronchioles were dilated, and their epithelial lining was thinned and flattened and often eroded. Their dilated lumens were filled with mucus in which were many eosinophils, neutrophils and neutrophilic cell débris. The bronchiolar walls and the peribronchiolar tissues were heavily infiltrated by eosinophils, neutrophils and lymphocytes. The tissue eosinophilia in these areas was quite striking and seemed to be directly related to the severity of the dilatation of the lumen and cellular content therein. The degree of atelectasis varied from completed to partial, and in some areas of sections from the upper lobes there were large excessively dilated alveoli, with thickened walls, suggestive of chronic emphysema. The pulmonary parenchyma in all sections showed varying degrees of fibrosis.

The spleen and wall of the esophagus showed a diffuse eosinophilia.

Sections from the heart, aorta, liver, pancreas, adrenals, stomach and intestine, genitourinary tract and central nervous system were normal.

The final pathologic diagnoses of significance were :

1. Obstruction, tracheobronchial, bilateral complete, due to inspissated mucus.

2. Massive pulmonary collapse due to 1.

3. Death from asphyxia due to 1 and 2.

4. Bronchiectasis and bronchiolitis mild to moderately severe, involving each lower lobe.

5. Fibrosis, pulmonary, bilateral patchy disseminated, moderately severe.

COMMENT

The sudden and unexpected death of this patient, with attendant convulsions, suggested at first the possibility of cocaine poisoning. This was ruled out by the time interval and the pathologic changes. It is agreed that the symptoms of cocaine poisoning occur within a few minutes after the use of the drug,[14] a conclusion which King [14] based on study of 43 deaths due to local anesthesia. In this case at least an hour elapsed between the time of cocainization and the terminal episode. Further, postmortem examination of 20 deaths due to cocaine or cocaine derivatives failed to reveal any remarkable pathologic features other than venous congestion,[15] while in this case the gross and microscopic pathologic changes are very striking.

It is obvious that the immediate cause of death in this case was asphyxia due to the plugging of the bronchial tree by thick viscid mucus. The asphyxial nature of this death is confirmed by the terminal hyperglycemia in the arterial circulation, a finding which has been noted as a characteristic postmortem finding in deaths due to asphyxia.[16] The atelectasis followed secondary to the obstruction of the air passages and the absorption of the alveolar air by the alveolar capillaries during the agonal struggles. The convulsions were due to cerebral anoxemia.

The real question involved in this case is why the bronchi should have so suddenly filled with mucus and thus begun the fatal chain of events.

Except for the vague complaint of dyspnea when the patient first returned to the ward from bronchography, a symptom probably indicative of the onset of the filling of the bronchial tree with mucus, he had not had any symptoms or signs of asthma while under observation. Nevertheless the autopsy finding of thick mucus filling the tracheobronchial tree suggested asthma as an etiologic factor in the case. Authorities agree that the following features are characteristic of the lungs of patients who die of asthma per se: [17]

1. Grossly: (*a*) Lungs distended and voluminous, emphysematous and doughy in consistency. (*b*) Bronchi and bronchioles filled with viscid, tenacious mucus.

2. Microscopically: (*a*) Thickening and hyalinization of the basement membrane of bronchi and bronchioles. (*b*) Thickening and infolding of mucosa in bronchi and bronchioles. (*c*) Cellular infiltrate in mucosa and submucosa, composed of eosinophils, lymphocytes and plasma cells in varying proportions. (*d*) Mucous plugs in lumens of most bronchi and bronchioles, with the same type of cells in the mucus as are present in the tissues. (*e*) Hypertrophy of the musculature. (*f*) Evidence of hyperactivity of mucus-secreting glands, with pressure atrophy of acinar cells.

Tuft [18] agrees in general with the foregoing list of pathologic changes characteristic of asthma but states that, in certain cases in which the mechanism of death is mechanical obstruction of bronchi by sticky, gelatinous exudate, "partial or complete atelectasis may be present." However, no references are given, and the remainder of the literature cited, including Rackemann's thorough and critical review article, does not mention this possibility.

14. King, J. J.: Local Anesthesia in Otolaryngology and Rhinology, with Supplement on the Toxic Effects of Local Anesthetics, edited by Emil Mayer, New York, Paul B. Hoeber, 1926, p. 158. McNally, W. D.: Toxicology, Chicago, Industrial Medicine, 1937, p. 490. Sollmann, Torald: A Manual of Pharmacology, ed. 6, Philadelphia, W. B. Saunders Company, 1942, p. 320.

15. King,[14] McNally.[14]

16. Moritz, Alan R.: The Pathology of Trauma, Philadelphia, Lea & Febiger, 1942, p. 182. Jetter, W. W., and McLean, R. R.: Biochemical Changes in Body Fluids After Death, Am. J. Clin. Path. **13**: 178 (April) 1943.

17. Vaughan, W. T.: Practice of Allergy, St. Louis, C. V. Mosby Company, 1939, pp. 946-947. Feinberg, S. M.: Allergy in Practice, Chicago, Year Book Publishers, Inc., 1944, p. 428. Craige, Branch, Jr.: Fatal Bronchial Asthma, Arch. Int. Med. **67**: 399 (Feb.) 1941. Fowler, Kenneth: Necropsy Studies on Two Patients Dying in Asthma, Pennsylvania M. J. **40**: 720 (June) 1937. Wiseman, J. R.: Report of a Case of Status Asthmaticus with Autopsy, Ann. Int. Med. **11**: 212 (July) 1937. Hansen.[8] Rackemann.[10]

18. Vaughan: Practice of Allergy, p. 271.

It is evident that the case reported here presented the pathologic features described as characteristic for asthmatic deaths, except that atelectasis, instead of emphysema, was the outstanding gross pathologic feature. Of course, as Rackemann[19] points out, there must be a clinical history of asthma in order to classify a death as "death from asthma per se"; and in this case that history must remain only a matter of conjecture, because the possibility of asthma did not suggest itself while the patient was alive, and specific inquiry was not made. Nevertheless, in spite of a lack of history of asthma, the microscopic findings are so consistent with those of allergic asthma that there must be considered the possibility of an asthmatic substratum in the tracheobronchial tree at the time of instillation of lipiodol. Furthermore, tissue eosinophilia is known and recognized as evidence of allergic response,[20] and it is stated that when edema and eosinophilia are found in the tissues there is strong suspicion of the allergic character of the lesion. The conclusion seems justified that the bronchi and bronchioles in this case were allergically prepared to act as a shock organ in an allergen-antibody reaction and that the allergen responsible for the fatal reaction was lipiodol, probably the iodine fraction, since allergic sensitivity to iodine is well known and may cause very severe and even fatal reactions.[21]

The fatal reaction may be reconstructed as follows: The patient was allergic, sensitive to iodine and possibly to other substances also, and his bronchial-bronchiolar tree was specially sensitized as a shock organ. The instillation of lipiodol brought allergen (iodine?) into direct contact with the shock organ and by reason of its contact in relatively high concentration produced a rapid and intense asthma-like response in which the predominant feature was secretion of viscid mucus. Respiratory obstruction, asphyxia, cyanosis, convulsions and death then followed.

CONCLUSION

In this patient the tracheobronchial tree was allergically prepared to act as a shock organ. The patient had allergic sensitivity to some constituent of lipiodol, probably the iodine. The immediate contact between allergen and shock organ produced a rapid and severe asthma-like reaction in which the production of thick mucus predominated, causing bronchial obstruction, massive pulmonary collapse and death from asphyxia.

19. Rackemann, F. M.: Deaths from Asthma, J. Allergy **15**: 249 (July) 1944.
20. Vaughan: Practice of Allergy, p. 51. Tuft, Louis: Clinical Allergy, Philadelphia, W. B. Saunders Company, 1938, pp. 62, 73.
21. Vaughan: Practice of Allergy, p. 851. Tuft: Clinical Allergy, p. 302.

Clinical Syndromes of War Neuroses.—Of all neuroses of war, these severe anxiety states present the most interesting diagnostic and therapeutic problems. No two clinical pictures are ever the same; each case represents a unique combination of symptoms, as highly personal as the combination of character traits which make up an individual personality. It is almost an impossibility to predict in any one case what course the illness will take; new symptoms may appear with startling suddenness and as rapidly disappear. Similarly it is difficult to anticipate how much spontaneous recovery will take place. Because of the severe initial distortion in personality from friends or relatives concerning the previous behavior of the individual patient, the preexistent personality structure and stability of the individual remain an assumption, and on this assumption must be based estimates of the degree of recovery.—Grinker, Roy R., and Spiegel, John P.: War Neuroses, Philadelphia, Blakiston Company, 1945.

TOXIC MANIFESTATIONS ASSOCIATED WITH PROLONGED ERTRON INGESTION

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The effects of large doses of vitamin D on animals were described in detail some years ago.[1] Since the amounts of vitamin D required to produce toxic effects were far beyond that necessary for the prevention or treatment of rickets, these results seemed, at the time of their presentation, to be largely of academic interest. However, the use of large doses of vitamin D in the treatment of arthritis has exposed a great number of people to the hazards of hypervitaminosis D. For this reason it is important to renew interest in the effects of vitamin D overdosage and to emphasize again, as others have done recently,[2] the symptoms and consequences of its toxicity.

Some authors,[3] in reporting on the use of vitamin D in the treatment of arthritis, have tended to minimize

TABLE 1.—*Laboratory Examination in Case 1, Renal Insufficiency Caused by Ertron Ingestion.*

Hypervitaminosis D

	May 1944	September 1944	February 1945
Blood pressure:			
Systolic (mm. Hg)	116	106	112
Diastolic (mm. Hg)	72	66	72
Basal metabolic rate (%)	...	...	—13
Urea clearance (%)	...	...	31.8
Phenolsulfonphthalein test (2 hrs.) (%)	...	...	10
Concentration test (max. sp. gr.)	...	...	1.015
Urine:			
Albumin	2+	1+	20 mg. per 100 cc.
Calcium (mg./24 hrs.)	...	229	410
Blood:			
Hemoglobin (Gm.)	8.3	8	11.5
R. B. C. (million/cu. mm.)	2.60	3.60	3.61
Serum:			
Calcium (mg. per 100 cc.)	...	10.1	13.0†
Phosphorus (mg. per 100 cc.)	...	5.2	4.3†
Phosphatase (units*)	...	...	3.2
Plasma:			
Albumin (mg. per 100 cc.)	...	3.7	3.3
Globulin (mg. per 100 cc.)	...	2.0	2.1
CO_2-comb. (volumes per cent)	...	...	38.6
Blood:			
N.P.N. (mg. per 100 cc.)	...	60.7	45.2
Urea nitrogen (mg. per 100 cc.)	60†	40.5	...
Uric acid (mg. per 100 cc.)	...	6.7	...
Creatinine (mg. per 100 cc.)	...	4.3	...

* Bodansky units per 100 cc. serum. † Average values.

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From the Department of Physiology, Northwestern University Medical School and Wesley Memorial Hospital.
Dr. W. M. Freeman and the Children's Memorial Hospital assisted in making the metabolic study in case 3. Dr. Robert W. Keeton and the Illinois Research Hospital gave access to the films taken in September 1944 in case 1.

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3. Snyder, R. G., and Squires, W. H.: A Preliminary Report on Activated Ergosterol: Form of High Dosage Vitamin D in Treatment of Chronic Arthritis, New York State J. Med. **40**: 708, 1940. Snyder, R. G.; Squires, W. H.; Forster, J. W.; Trager, C. H., and Wagner, L. C.: The Treatment of 200 Cases of Chronic Arthritis with Electrically Activated Vaporized Sterol, Industrial Med. **11**: 295, 1942. Snyder, R. G.; Squires, W. H. and Forster, J. W.: A Six Year Study of Arthritis Therapy, Indust. Med. **12**: 291, 1943. Steinberg, C. L.: Massive Doses of Vitamin D in Arthritis: Its Effect on Calcium Metabolism, J. Lab. & Clin. Med. **24**: 17, 1938.

the seriousness of the toxic effects which it produced. Others [4] have pointed out the variable response of human beings to large doses of vitamin D and the possible damage to the kidneys which may result from its use.[5] The manufacturers of one vitamin D preparation, Ertron, have consistently maintained that serious toxic

Fig. 1 (case 1).—Right shoulder in September 1944, showing metastatic calcification associated with prolonged Ertron medication.

effects have not resulted from the use of their preparation. However, Boots [6] observed toxic manifestations in 18 of 31 arthritic patients who received Ertron, and Freyberg [7] stated that it has real potentialities for producing undesirable effects. McChesney and Messer [8] demonstrated that it was a potent hypercalcemic factor when administered to dogs in large amounts. One of us [9] called attention in 1942 to the false sense of safety which the advertising mentioned engendered in the mind of the physician who used such preparations in the treatment of arthritis.

There seems to be general agreement regarding the view that doses of vitamin D such as are used in the treatment of arthritis may be toxic. However, there is a difference of opinion as to how serious these toxic reactions may be. That such reactions may be sufficiently serious to jeopardize life and health is evidenced by the severe renal insufficiency recently reported by Danowski, Winkler and Peters [10] as occurring in 2 patients who had received 150,000 to 500,000 units of vitamin D daily. The following case reports are presented as further evidence of the fact that severe renal insufficiency and disability may result from the ingestion of doses of Ertron such as are currently used in the treatment of arthritis. The data on case 3 demonstrate that the product reduced calcium retention by a child with rheumatoid arthritis.

Case 1.—A white man aged 49 was admitted to a hospital Feb. 25, 1945 because of weight loss, weakness, anorexia, desquamation of the skin, polyuria, pruritus and bursitis.

The patient stated that he took Ertron irregularly in 1942, including one period of 300,000 units daily for three months, because of bursitis of the right shoulder. In March 1943 he had a prostatectomy and at that time he had some nitrogen retention. Ertron medication was resumed at this time (100,000 units per day) for three months. His weight in 1943 was 145 pounds (66 Kg.).

During the winter of 1943 and early spring of 1944 the patient suffered from generalized pruritus, weakness and shortness of breath. In March he took a vacation and during this time experienced some ataxia and developed an effusion of the right shoulder and hip. In May 1944 he was admitted to a diagnostic clinic because of weakness, anorexia and a loss of weight. The outstanding physical findings at this time were exfoliative dermatitis and enlarged inguinal lymph nodes. The weight was 112 pounds (51 Kg.), the blood pressure 116/72. X-ray films of the chest and stomach were normal. The laboratory findings at this time and subsequently are included in tables 1 and 2. A diagnosis of chronic glomerular nephritis with renal insufficiency and severe secondary anemia was made and the patient returned to his home, where his condition remained unchanged.

In September 1944 he entered another hospital complaining of generalized itching, weakness, fatigue, exfoliation of the skin and pain in the breasts.

Fig. 2 (case 1).—Right shoulder in February 1945, six months after ingestion of Ertron and a high milk diet had been discontinued.

At this time his weight was 102 pounds (46 Kg.), his blood pressure 106/66. There were emaciation and exfoliation of the skin, connective tissue deposits on the conjunctivas and tender breasts, the right one being enlarged and fluctuant. The right shoulder bore a large soft tumor and showed slight limitation of motion. The ankles were somewhat edematous, the prostate

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5. Slocumb, C. H.: Vitamin D in the Treatment of Infectious Arthritis, Ann. Int. Med. **16**: 241, 1942.
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9. Freeman, Smith: Irradiated Ergosterol Poisoning, Correspondence, J. A. M. A. **119**: 968 (July 18) 1942.
10. Danowski, T. S.; Winkler, A. W., and Peters, J. P.: Tissue Calcification and Renal Failure Produced by Massive Dose Vitamin D Therapy of Arthritis, Ann. Int. Med. **23**: 22 (July) 1945.

slightly enlarged. X-ray examination revealed calcium deposits in the soft tissues at many points (figs. 1 and 2). It was noted that the patient largely restricted his intake to water, milk and milk dishes. He complained bitterly of the cold. The patient was diagnosed as having pityriasis rubra, deposits of calcium in the bursae and benign hypertrophy of the prostate.

Fig. 3 (case 1).—Left side of pelvis in September 1944, showing calcification above hip joint and in prostate.

Part of the laboratory data obtained at this time are included in table 1.

During the latter part of 1943 and the first half of 1944 the patient stated that he took with some irregularity 100,000 to 300,000 units of Ertron daily.

At the time of admission to the original hospital, Feb. 25, 1945, the patient stated that he had not had any Ertron since September 1944. At this time he also discontinued drinking milk in accordance with instructions given him at the second hospital. The principal physical findings at the time of this admission to the first hospital were weight 118 pounds (53.5 Kg.), blood pressure 112/72, generalized exfoliation and pigmentation of the skin, emaciation, moderate pitting edema of the lower extremities and heavy fat deposits in the conjunctivas. X-ray examination again revealed extensive calcification about numerous joints, but these deposits were less dense than shown on the films taken in September 1944. The excretion urograms showed poor kidney function. The patient had a subnormal body temperature throughout his stay in the hospital. He was diagnosed as having Ertron intoxication, exfoliative dermatitis and subdeltoid bursitis.

Since leaving the hospital the patient's urinary calcium has remained elevated. Roentgenologic examination of the right shoulder and hip taken July 23, 1945 indicates that there is still some soft tissue calcification, but the deposits are less dense and extensive than on the previous films (figs. 1, 2, 3 and 4). The skin at this time was much improved but was still edematous about the ankles. The serum calcium was 11.20, inorganic phosphorus 4.1 and nonprotein nitrogen 45.1 mg. per hundred cubic centimeters on July 23, 1945. The twenty-four hour urinary calcium at the same time was 405 mg. Polyuria and albuminuria were still present.

CASE 2.—A white man aged 39, admitted to a hospital on Aug. 29, 1945 because of low back pain, nausea, vomiting and generalized aching, stated that he developed a backache two and a half years previously, during an attack of influenza, which had persisted to some degree ever since. He had been examined repeatedly by numerous physicians. In 1944 the patient was admitted to a second hospital, where the backache was ascribed to fibrositis and nonspecific prostatitis. At that time the blood pressure was 132/72 and he weighed 135 pounds (61 Kg.). The blood urea was 26 mg. per hundred cubic centimeters.

Various forms of therapy were tried, including typhoid vaccine, thyroid, oral calcium, physical therapy, osteopathy, braces

TABLE 2.—*Composition of Joint Exudate and Exfoliated Skin in Patient 1, with Ertron Poisoning*

	Aspirated Fluid (3/8/45)	Exfoliated Skin (March 1945)
Calcium	1.80 Gm. per 100 cc.	3.08 mg. per 100 Gm.
Phosphorus	0.778 Gm. per 100 cc.	3.50 mg. per 100 Gm.
Protein	3.22 Gm. per 100 cc.	
Nonprotein nitrogen	65.0 mg. per 100 cc.	

and vitamins. Previous roentgenograms of the teeth and spine were negative.

In the spring of 1945 the patient took one capsule daily of vitamin D (50,000 units) for fifty days. In June he started Ertron capsules, taking six capsules per day, 250 capsules in all, and had in addition one intramuscular injection of 500,000 units. Three weeks prior to admission he stopped this medication because of the onset of nausea, vomiting and extreme restlessness. His teeth became extremely sensitive to temperature and sharp shooting pains developed in both legs. An old bursitis of the left shoulder flared up. His eyes became bloodshot, and a maculopapular eruption appeared on his face.

Fig. 4 (case 1).—Left side of pelvis in February 1945, six months after ingestion of Ertron and a high milk diet had been discontinued.

He also complained of daytime frequency of urination and nocturia, and at the time of admission he had been unable to sleep for five days and nights despite sedation.

On physical examination the weight was 136 pounds (61.7 Kg.), the blood pressure was 155/85 and the vessels of the conjunctivas were much injected. The heart, lungs and abdomen were normal. Tendon and superficial reflexes were present. Spasm of the sacrospinalis muscle was evident. The prostate was small and indurated. The prostatic secretion contained some leukocytes, and there was a residual urine of 60 cc. No abnormalities of the teeth or skeleton could be demonstrated by x-ray. The electrocardiogram showed left axis deviation but was otherwise normal. The laboratory findings obtained at this time and on a subsequent visit to the hospital are shown in table 3. He was diagnosed as having renal insufficiency, probably due to excessive Ertron medication, chronic myositis of the sacrospinalis muscle and chronic prostatitis.

The patient remained in the hospital seven days and was extremely restless despite sedation. The body temperature remained subnormal throughout his stay. The blood pressure decreased to 134/80 before the patient was discharged. He was instructed in the selection of a diet low in calcium and phosphorus and encouraged to maintain a high fluid intake.

On his next admission (Oct. 17, 1945) there were signs of definite improvement. He no longer had insomnia, pains in the back and legs, hypersensitive teeth or extreme restlessness. His appetite was better, there was no nausea, and the patient stated that his head seemed much clearer. Physical examination was essentially negative except for the persistence of some congestion of the conjunctival vessels. The laboratory data obtained at this time (table 3) gave further evidence of this improvement.

EFFECT OF ERTRON ON CALCIUM EXCRETION

The effect of Ertron on the calcium balance of a patient with arthritis was also studied. This case history and procedure follows:

CASE 3.—A white boy aged 9 years, weighing 49 pounds (22 Kg.) had had rheumatoid arthritis five years at the time this study was made. When 4 years of age (in the fall of 1932) he had a sudden onset of pain in the right ankle associated with redness, limitation of motion and fever (104-105 F. daily for five months). The fever and redness of the joints subsided,

TABLE 3.—*Laboratory Findings in Patient 2, with Renal Insufficiency Caused by Ertron Ingestion* *

	July 1944	August 1945	October 1945
Blood pressure:			
Systolic (mm. Hg)	132	155	112
Diastolic (mm. Hg)	72	85	75
Basal metabolic rate (%)	...	...	−12
Urea clearance (%)	...	26.3	37.4
Phenolsulfonphthalein test (2 hrs.) (%)	...	22	42.5
Concentration test (max. sp. gr.)	...	1.015	...
Urine:			
Albumin (mg. per 100 cc.)	...	5	Neg.
Calcium (mg./per hrs.)	...	120	68
Serum:			
Calcium (mg. per 100 cc.)	...	12.0	12.2
Phosphorus (mg. per 100 cc.)	...	5.5	3.9
Phosphatase (units †)	...	...	5.1
Blood:			
N.P.N. (mg. per 100 cc.)	...	66	40.5
Urea nitrogen (mg. per 100 cc.)	16	43	17.2
Creatinine (mg. per 100 cc.)	...	2.5	1.8
Hemoglobin (Gm.)	...	12.0	13.0
R. B. C. (million/cu. mm.)	...	3.85	3.94

* Ertron administration was stopped a few days prior to the determination made in August 1945 and not resumed.
† Bodansky units per 100 cc. serum.

but enlargement and limitation of motion persisted. During the succeeding four and a half years other joints became involved. At the time of this study he had limitation of motion and enlargement of the joints of the fingers, toes, wrists, elbows, ankles, knees and hips. X-ray studies showed considerable rarefaction of the bones in the involved areas.

During the time of the metabolic study his clinical condition remained unaltered until Ertron administration, together with a high calcium diet, was instituted. During the second collection period on this regimen the patient complained of joint pains, loss of appetite and frequency of urination. At this time there was puffiness about the eyes and albuminuria. The symptoms and albuminuria disappeared approximately one week after Ertron administration was discontinued.

The low calcium diet and metabolic procedure were similar to that described by Bauer and Aub.[11] The low calcium diet provided 1,600 calories per day and contained, by analysis,

TABLE 4.—*Effect of Ertron on Calcium Balance in a Child with Rheumatoid Arthritis*

Case 3		Low Calcium Diet, 0.2 Gm. Daily		High Calcium Diet, 1.4 Gm. Daily	
		1st Period Mg./Period	2d Period Mg./Period	1st Period Mg./Period	2d Period Mg./Period
Urine	Control...	176.7	174.7	464.3	337.1
	Ertron	320.2	343.3	776.2	731.3
Feces	Control...	649.2	629.2	2,368.0	1,986.0
	Ertron	526.0	480.0	3,176.0	2,816.0
Total	Control...	825.9	803.9	2,832.3	2,323.1
	Ertron	846.2	823.3	3,952.2	3,547.3
Balance	Control...	+174	+196	+4,168	+4,677
	Ertron	+154	+177	+3,048	+3,452

Excreta collected in five day periods.

0.2 Gm. of calcium. The high calcium diet was the same with the addition of 1 quart of milk daily and a suitable reduction in calories from other sources. All control data were obtained before treatment with Ertron was instituted. Each five day metabolic period was preceded by one week on the diet before collection of excreta was begun. The studies consisted of two metabolic periods on each diet. Ertron medication (100,000 units daily) was begun one week before the collection of excreta and continued uninterrupted throughout the period of observations of its effect, while the patient was on a low and a high calcium intake. The results of this study are shown in table 4.

COMMENT

The 2 patients apparently suffering from toxic symptoms due to Ertron had many findings in common, including Ertron ingestion, renal insufficiency, a high milk consumption, polyuria, albuminuria, lassitude, weakness, anorexia, eosinophilia, anemia, enlargement of the prostate, bursitis, skin eruption, involvement of the conjunctiva and subnormal body temperature. It is beyond the scope of this paper to discuss these findings in any detail. The symptoms of vitamin D poisoning have been well described by others.[12] Slocumb[3] reported an elevation of the blood urea in a patient receiving vitamin D who had no symptoms of poisoning. Once manifestations of toxicity have occurred, they may persist for some time after vitamin D administration has been discontinued. The prolonged effects of vitamin D poisoning are well illustrated in cases 1 and 2 as in cases reported by others.[2]

Metastatic calcification of the soft tissues is one of the characteristic findings in animals poisoned with vitamin D, and the kidney is frequently the site of these deposits. Ashford[13] demonstrated that metastatic calcification, produced experimentally in rabbits, underwent resorption after vitamin D administration was discontinued. Metastatic calcification was present in 1 of the patients in the report of Danowski, Winkler and Peters and was a conspicuous finding in the first patient in this report. This patient, though maintained on a low

11. Bauer, W., and Aub, J. C.: Studies of Inorganic Salt Metabolism: I. The Ward Routine and Methods, J. American Dietet. A. **3**: 106, 1927.
12. Reed, C. I.: Symptoms of Viosterol Overdosage in Human Subjects, J. A. M. A. **102**: 1745 (May 26) 1934. Tumulty and Howard,[3] Danowski, Winkler and Peters.[10]
13. Ashford, C. A.: The Phosphorus Distribution in Blood and the Calcium and Phosphorus Excretion During Hypervitaminosis D, Biochem. J. **24**: 661, 1930.

calcium-low phosphorus diet has continued to excrete approximately 400 mg. of urinary calcium daily as judged by repeated calcium determinations during the past eight months. It is an interesting finding that the calcium-rich viscid fluid aspirated from the subdeltoid bursa of this patient had the same calcium-phosphorus ratio as normal bone (2.30) [14] (table 2). The calcium and phosphorus content of desquamated skin are also included in this table. No comparable skin sample from patients with any other condition has been obtained for analysis.

Numerous studies have demonstrated that the absolute as well as the relative amounts of calcium and phosphorus in the diet influence the toxicity of vitamin D.[15] Both of the intoxicated patients presented in this report gave as a part of their history that they consumed from 1 to 2 quarts of milk daily. One of the patients of Danowski and his associates was reported as drinking a quart of milk daily. Freeman and Farmer [16] showed that a given dose of vitamin D may or may not produce hypercalcemia in dogs, depending on their calcium intake. It has also been shown that dogs given large doses of vitamin D manifest a more severe and prolonged hypercalcemia than normal dogs following the oral [15] or intravenous [17] administration of calcium. In view of the experimental evidence, it is surprising to find that little attempt has been made to control the calcium intake of patients receiving large doses of vitamin D. Some of the patients have been encouraged to drink liberal amounts of milk.[18] It is reasonable to suppose that the high calcium and phosphorus intake which a quart or more of milk daily provides contributed materially to the toxicity of Ertron taken by the patients who were the subjects of the present report. It has also been shown [19] that a liberal milk intake, as well as other foods rich in phosphorus, have an adverse effect on the blood chemistry, symptomatology and roentgenologic findings of patients with renal insufficiency.

The metabolic study in case 3 revealed an increase in the urinary excretion of calcium while the patient was receiving Ertron both on the low and on the high calcium diets. Ertron reduced the fecal excretion of calcium on the low calcium diet and increased the fecal loss of calcium while the patient was on a high calcium diet. Studies on animals have shown that large doses of vitamin D reduce calcium retention, as evidenced by decalcification of the bones, even to the point of causing spontaneous fractures.[20] Ertron reduced calcium retention slightly on the low and definitely on the high calcium diets (table 4). While this patient was on a high calcium diet and receiving Ertron he developed an albuminuria which had never been present before and which cleared up one week after Ertron administration was discontinued. The serum calcium of this child was not elevated at the end of the metabolic study. These findings are evidence that an increased urinary calcium excretion and conditions favorable to the deposition of calcium in the kidney may precede, and need not be accompanied by, hypercalcemia. These considerations make apparent how renal failure might occur without having been preceded by a hypercalcemia. These results show clearly that the kidneys of a person taking excessive doses of vitamin D may be required to excrete much more calcium than would normally be the case, particularly when the calcium intake is high. An increased urinary excretion of inorganic phosphate usually occurs also in hypervitaminosis D.[21] The increased concentration of calcium and phosphate in the fluids that are in contact with the kidney would provide favorable circumstances for calcification of this organ. That the organ need not be previously damaged to undergo calcification during hypervitaminosis D is indicated by the experimental study of Ham [22] as well as by the work of many other workers.

According to a report prepared by a committee of the American Rheumatism Association [23] the therapeutic effects of large doses of vitamin D are of doubtful value in the treatment of arthritis. The whole question of vitamin D therapy in the treatment of arthritis has been thoroughly discussed by Comroe.[24] The therapeutic objectives to be achieved by large doses of vitamin D have not been clearly formulated by any of its exponents. The results obtained in case 3 indicate that large doses of Ertron may reduce calcium retention by the body. This effect would seem to be undesirable for patients who already have a rarefaction of the skeleton. Irrespective of the merits of vitamin D in the treatment of arthritis, it remains an established fact that large doses are toxic to human beings and animals. That Ertron is no exception to this statement is evidenced by the following facts: (*a*) Both patients in the present report and 1 patient in the report by Danowski and his associates showed toxic manifestations of a serious nature associated with an altered calcium metabolism while taking Ertron, and these manifestations declined after this medication was discontinued; (*b*) Ertron was shown to be a potent hypercalcemic agent in dogs by McChesney and Messer;[8] (*c*) Ertron is a potent source of vitamin D, according to the claims of the manufacturer.[25]

It is beyond the scope of this paper to discuss the toxicity of sterols, other than vitamin D itself, that may

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21. McChesney and Messer.[8] Freeman and Farmer.[16]

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23. Primer on Arthritis, Prepared by a Committee of the American Rheumatism Association, J. A. M. A. **119:** 1089 (Aug. 1) 1942.

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25. Ertron, U. S. patents 2,106,799, 2,106,780 and 2,106,782, Nutrition Research Laboratories, Chicago.

contribute to the toxicity of vitamin D preparations. It has been shown [26] that pure, crystalline vitamin D (calciferol) is toxic and that hypercalcemia is associated with toxic manifestations from this substance. A hypercalcemia accompanied by a significant increase in the ionic calcium content of the blood, from any cause, is usually associated with manifestations of toxicity. If elevation of the blood calcium persists for a sufficient length of time, renal failure is the inevitable consequence. Instances of toxicity from vitamin D in the absence of hypercalcemia may be due to hyperphosphatemia which occurs secondary to renal failure or because the blood inorganic phosphorus of some species (e. g. the rabbit) is readily elevated by large doses of vitamin D. Depression of the hypercalcemia and elevation of the serum inorganic phosphorus and nonprotein nitrogen were shown by Taylor and his associates [27] to be characteristics of advanced irradiated ergosterol poisoning in dogs. These authors as well as others [28] have pointed out the decided similarity of the toxic manifestations caused by solution of parathyroid and by vitamin D. Collip [29] has shown that renal insufficiency, accompanying experimental hyperparathyroidism in dogs, reduces the hypercalcemia while the inorganic phosphorus and nonprotein nitrogen increase to values far above normal. More recently, Neufeld and Collip [30] have shown that hypercalcemia cannot be produced by solution of parathyroid administered to dogs with a hyperphosphatemia.

CONCLUSION AND RECOMMENDATIONS

The use of large doses of vitamin D in the treatment of arthritis is a dangerous practice which may do the patient harm. The use of repeated large doses of vitamin D for any therapeutic purpose should be accompanied by appropriate tests, performed at regular intervals, to determine the state of calcium metabolism and kidney function. The maintenance of a relatively constant calcium and phosphorus intake simplifies this problem. The following tests are suggested as appropriate for this purpose: blood nonprotein nitrogen or urea, serum calcium and inorganic phosphorus; the twenty-four hour urinary excretion of calcium with the patient maintained on a low calcium diet for no less than two days prior to the collection of urine; qualitative test for the presence of albumin in the urine; concentration-dilution test and phenolsulfonthalein excretion as measures of tubular function. It follows that such tests should be applied to patients prior to the administration of large doses of vitamin D and that evidence of impaired kidney function should be considered as a contraindication to this treatment. We do not mean to imply that these tests, though the results should be consistently within the normal range, give one assurance that metastatic calcification is not promoted by this treatment. However, gross impairment of the kidneys, such as was present in cases 1 and 2 of this report, could certainly have been averted if the tests mentioned had been applied routinely in conjunction with the Ertron therapy. It is suggested that the history taken on every patient suspected of having renal disease should include questions intended to determine whether or not the patient has ever taken large doses of vitamin D.

SUMMARY

1. Renal insufficiency occurred in 2 patients receiving doses of Ertron such as are used currently in the treatment of arthritis.

2. A decreased calcium retention and an increased urinary excretion of calcium occurred in a child with rheumatoid arthritis who was given 100,000 units of Ertron daily.

3. Large doses of vitamin D from any source are potentially toxic, and this toxicity can be explained as due to its effect on calcium and phosphorus metabolism and kidney function.

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EFFECT OF PENICILLIN ON COURSE OF EARLY SYPHILIS

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In early syphilis prompt diagnosis and initiation of treatment decrease opportunity for dissemination of infection and increase probability of cure. The dual effectiveness of penicillin against Treponema pallidum and Neisseria gonorrheae has complicated the problem of the early diagnosis of syphilis. The incubation period of gonococcic urethritis is usually three to five days and exceptionally one to two weeks;[1] the incubation period of primary syphilis is ten to ninety days, with an average of three weeks.[2] Consequently, in simultaneous infections the urethritis may be treated with penicillin while the patient is in the incubation stage of syphilis. For various reasons also treatment may be given when a chancre is already present: the lesion may be missed because of its unusual location, as in intrameatal, intraurethral, extragenital or cervical chancres; the chancre may be concealed by inflammatory phimosis or it may be regarded as a banal lesion; and, in cases in which syphilis is suspected, the diagnosis may seemingly be excluded by one or more negative dark field examinations or serologic tests for syphilis.

When early syphilis is treated with 60,000 to 1,200,000 units of penicillin in seven and one-half days, the disappearance of treponemes from lesions, the healing of lesions and the reversal of serologic tests are practically the same with all dosages. The chief difference is in the incidence of relapse, which increases as the dose decreases and is prohibitive with the smaller doses of 60,000 to 300,000 units.[3]

In uncomplicated gonococcic urethritis the usual dose of penicillin is 100,000 units given over a period of nine to twelve hours; less often 200,000 to 300,000 units is administered in twenty-seven to forty-two hours or in a single injection in beeswax-peanut oil.[4] Since

From the Medical Service, A. S. F. Regional Station Hospital, Fort Bragg, North Carolina.

1. Pelouze, P. S.: Gonorrhea in the Male and Female, ed. 3, Philadelphia, W. B. Saunders Company, 1941, p. 102.
2. Moore, J. E.: The Modern Treatment of Syphilis, ed. 2, Springfield, Ill., Charles C Thomas, Publisher, 1941, p. 7.
3. Moore, J. E.; Mahoney, J. F.; Schwartz, W. H.; Sternberg, T. H. and Wood, W. B.: The Treatment of Early Syphilis with Penicillin, J. A. M. A. **126**: 67 (Sept. 9) 1944.
4. Romansky, M. J.; Murphy, R. J., and Rittman, G. E.: Single Injection Treatment of Gonorrhea with Penicillin in Beeswax-Peanut Oil, J. A. M. A. **128**: 404 (June 9) 1945. Leifer, W.; Martin, S. P., and Kirby, W. M. M.: The Treatment of Gonococcic Urethritis with Single Injections of Penicillin-Beeswax-Peanut Oil Mixtures, New England J. Med., to be published.

the effects of these dosage schedules on early syphilis are not definitely known, it seemed desirable to review 7 cases of simultaneous infection observed in our clinic and to evaluate 8 cases collected from the literature. That the problem is more than academic is shown by the observations of Kemp and Shaw,[5] who found primary syphilis associated with gonorrhea in 1.4 per cent of 500 males and 3.0 per cent of 500 females.

REPORT OF CASES

For the sake of convenience, the case reports are numbered in sequence: Cases 1 to 7 were observed in our clinic, and cases 8 to 15 have been collected from the literature.

CASE 1.—A white soldier aged 34 was exposed on April 24, 1945 and reported with a urethral discharge on May 3. A diagnosis of gonococcic urethritis was established, and on the same day the patient was given four intramuscular injections of 25,000 units of penicillin in saline solution at three hour intervals. Reexaminations were made at weekly intervals for the next three weeks; the patient remained clinically well, and bacteriologic studies for N. gonorrheae were negative. On May 27, thirty-three days after the last exposure, the patient developed an ulcer in the coronal sulcus of the penis; dark field examination revealed Treponema pallidum, and the Kahn test of the blood was negative.

CASE 2.—A white soldier aged 32 was exposed on Nov. 24, 1944 and developed a urethral discharge on December 3. On December 9, after the diagnosis of gonococcic urethritis was confirmed, he was given 100,000 units of penicillin in saline solution in four intramuscular injections of 25,000 units at three hour intervals. On Jan. 13, 1945, fifty days after the last exposure, the patient developed a penile ulcer; dark field examination revealed Treponema pallidum, and the Kahn test of the blood was negative.

CASE 3.—A Negro soldier aged 21 received 100,000 units of penicillin for gonococcic urethritis on Nov. 14, 1944. No penile lesion was present and the serologic test for syphilis was negative. The last sexual exposure occurred approximately seven days before the appearance of the urethritis, and the patient denied any subsequent exposure. At no time during the observation period was a penile lesion or an eruption observed by the patient or the physician. A routine Kahn test of the blood was performed on December 18, and it was found positive (4 units); Kahn tests on Dec. 28, 1944 and Jan. 17, 1945 were also positive and showed an increase from the original titer of 4 units to 160 units. On January 17 the patient was again examined thoroughly and no lesions of the skin and mucous membranes were found, the only abnormality being a moderate generalized lymphadenopathy, most pronounced in the inguinal regions.

CASE 4.—A white soldier aged 24 was seen on May 31, 1945 with a urethral discharge and a small, nonindurated erosion on the mucous surface of the prepuce. The last sexual exposure had occurred on May 8. The smear and culture of the urethral discharge established the diagnosis of gonococcic urethritis; a single dark field examination and Kahn and Wassermann test of the blood were negative. On June 1 the patient was given 100,000 units of penicillin intramuscularly in four equal doses at three hour intervals. The patient was not seen again until August 25, when he returned with a large punched-out, indurated ulcer of the external surface of the prepuce and a generalized secondary syphilitic eruption. The ulcer had been present for twenty-five days but the patient had been reluctant to report it. The original erosion of the prepuce was completely healed. The dark field examination revealed Treponema pallidum, and the Kahn and Wassermann tests of the blood were positive. There had been no sexual exposure since May 8, and the recurrent (?) chancre had appeared on August 1, that is, eighty-five days later.

5. Kemp, J. E., and Shaw, C.: The Role of Acute Gonorrheal Urethritis in Masking the Lesions of Early Syphilis, Am. J. Syph., Gonor. & Ven. Dis. **20**: 56 (Jan.) 1936.

CASE 5.—A Negro soldier aged 21 was given a single intramuscular injection of 100,000 units of penicillin in beeswax-peanut oil for gonococcic urethritis. Prior to treatment a small, nonindurated excoriation was noted at the urethral meatus, but this was attributed to the profuse discharge and no dark field examination was made. There was no enlargement of the inguinal lymph nodes. About six hours after the penicillin injection the patient complained of severe chilly sensations and feverishness, and his temperature was found to be 103.8 F. Primary syphilis was immediately suspected, and it was observed that the excoriation at the meatus had increased in size. A dark field examination was made at once, with negative results. Dark field examinations were repeated daily thereafter, and on the third day following treatment Treponema pallidum was demonstrated. The serologic tests for syphilis were positive.

CASE 6.—A white soldier aged 35 was last exposed on July 23, 1945 and on August 17 he noted a lesion of the mucous surface of the prepuce. When he reported to his clinic on August 20 there was a balanitis and purulent discharge, and, without requisite laboratory examinations, 100,000 units of penicillin was given intramuscularly in divided doses. About four hours after the first injection the patient developed fever and generalized aching pains, and his temperature was found to be 103.2 F. The fever was erroneously interpreted as recurrent malaria, although no plasmodia were present in the blood smear. The patient was referred to the Venereal Disease Clinic on August 23 and was found to have a large healed chancre of the prepuce, a secondary syphiloderm and, repeatedly, strongly positive serologic tests for syphilis.

CASE 7.—A white soldier aged 22 was treated oversea on July 3, 1945 for gonococcic urethritis with 100,000 units of penicillin administered over a period of eight hours. The patient stated that there were no genital lesions and no inflammatory phimosis when he was treated. About four to five hours after the initial dose of penicillin the patient developed fever, chilly sensations and generalized aching pains; subsequently there was severe headache, and the temperature rose to 105.8 F. The patient was hospitalized, but no cause for the fever was found, and the temperature became normal within twenty-four hours. The serologic tests for syphilis were negative. On August 11 the patient noted a generalized eruption, and he was referred to the Venereal Disease Clinic. He was found to have a generalized secondary syphilitic eruption, the dark field revealed Treponema pallidum, and the serologic tests were strongly positive for syphilis.

CASE 8.—Ricchiutti[6] reported the administration of 100,000 units of penicillin in saline solution to a patient with gonococcic urethritis and inflammatory phimosis. Following the second injection of 20,000 units the patient's temperature rose to 101.4 F. and the prepuce became more swollen. A dorsal slit was performed and an ulcer of the sulcus was exposed. Dark field examinations were negative; the Kahn test of the blood, which was negative at first, became positive sixteen days after the treatment with penicillin.

CASE 9.—Carpenter[7] reported that a patient received 50,000 units of penicillin in saline solution in five intramuscular injections of 10,000 units twenty-two days after the last exposure. The patient developed two clinically typical but dark field negative penile ulcers on the forty-eighth day after exposure, and it was not until the seventy-second day that the diagnosis of syphilis was established, when the serologic tests became positive.

CASE 10.—Boyd, Wagner and Hewson[8] published a report of a case in which urethritis and epididymitis were associated with penile ulcers. Since the dark field examination and the Kahn test of the blood were negative, treatment was instituted and 80,000 units of penicillin given. The penile ulcers healed but recurred about twenty-seven days later at the original

6. Ricchiutti, J. F.: Penicillin Therapy in Gonorrhea with Associated Undiagnosed Early Syphilis, U. S. Nav. M. Bull. **43**: 1031 (Nov.) 1944.
7. Carpenter, C. C.: Failure of Penicillin to Prevent Syphilis, U. S. Nav. M. Bull. **43**: 389 (Aug.) 1944.
8. Boyd, G. G.; Wagner, J. A., and Hewson, G. F.: Effects of Subtherapeutic Dose of Penicillin on Development of Primary Lesion, U. S. Nav. M. Bull. **43**: 1034 (Nov.) 1944.

site. The Kahn tests of the blood remained negative, but some four weeks later Treponema pallidum was demonstrated in the lesions.

CASE 11.—Canizares [9] reported a similar case in which the dark field examination and Kahn test of the blood were negative. Both the urethritis and the penile lesion responded to 50,000 units of penicillin. Eighteen days following treatment the penile ulcer recurred, and five days after that the dark field revealed Treponema pallidum.

CASE 12.—Baier and Pincus [10] recorded a case in which the penile lesion was not called to the attention of the physician until 100,000 units of penicillin had been given for gonococcic urethritis. Several dark field examinations and Kahn tests of the blood were negative. The penile ulcers healed and recurred about a month later. Dark field examinations remained negative, but repeated serologic tests for syphilis were positive.

CASE 13.—Hailey [11] treated a patient for gonococcic urethritis with 100,000 units of penicillin only after repeated dark field examinations of the penile lesions and Kahn tests of the blood had been negative. The penile ulcers healed and recurred about a month later. Dark field examinations remained negative, but repeated serologic tests for syphilis were positive.

CASE 14.—Sternberg and Turner [12] recorded an instance in which 100,000 units of penicillin was given before a dark field examination was made of a penile ulcer. The following day the dark field examination was negative and the ulcer healed rapidly. "Six weeks later a typical dark field positive chancre appeared in the same location. The patient denied further sexual exposure."

Effect of Penicillin on the Syphilitic Infection, and Number of Days After Penicillin Treatment That a Positive Diagnosis of Syphilis Was Established

Case No.	Effect of Penicillin on Syphilitic Infection	Number of Days After Penicillin Treatment: Positive Dark Field	Number of Days After Penicillin Treatment: Positive Serologic Test
1	Prolonged incubation period....	24	..
2		35	..
9		..	50
3	Symptomless infection.....	..	34
4	Chancre heals and later recurs..	85	85
10		55	..
11		23	..
12		..	30+
13		..	30+
14		42	..
15		..	60+
5	Febrile Herxheimer reaction.....	3	3
6		..	3
7		39	39
8		..	16

CASE 15.—Shafer and Zakon [13] observed a patient who had received elsewhere 100,000 units of penicillin for gonococcic urethritis at the same time that he had a penile lesion. Apparently no dark field examination of the penile lesion had been made, but the Kahn test of the blood had been negative. Two months later the patient was found to have a recurrence of the penile lesion and a generalized secondary eruption; the Kahn and Wassermann tests of the blood were positive.

The pertinent data in the 15 cases are presented in the accompanying table. It is apparent that the diagnosis of syphilis was established in every case, by appropriate laboratory measures, less than ninety days after penicillin was administered for gonococcic urethritis. The longest period was eighty-five days, in case 4, but this was only because of failure to return for observation at the usual intervals following treatment.

9. Canizares, Orlando: Penicillin in Treatment of Simultaneous Infections of Syphilis and Gonorrhea, Arch. Dermat. & Syph. **50**: 246 (Oct.) 1944.
10. Baier, G. F., III, and Pincus, J. A.: The Effect of a Small Dose of Penicillin on the Diagnosis of Early Syphilis, Mil. Surgeon **95**: 359 (Nov.) 1944.
11. Hailey, H. E.: Suppression of Syphilis by Penicillin Therapy of Gonorrhea, Arch. Dermat. & Syph. **50**: 269 (Oct.) 1944.
12. Sternberg, T. H., and Turner, T. B.: The Treatment of Sulfonamide Resistant Gonorrhea with Penicillin Sodium, J. A. M. A. **126**: 157 (Sept. 16) 1944.
13. Shafer, Bertha, and Zakon, S. J.: Early Syphilis Masked and Delayed by Penicillin in Treatment of Gonorrhea, Arch. Dermat. & Syph. **50**: 200 (Sept.) 1944.

COMMENT

The doses of penicillin used for gonococcic urethritis may have several potential effects on coincidental early syphilitic infection. When given during the incubation period it is conceivable that the syphilitic infection may be cured; but it is more likely that a chancre will appear, perhaps after a prolonged period of incubation, or that a completely symptomless infection will result. Treatment during the primary stage of syphilis may be anticipated to heal the lesion prematurely, following which the lesion may recur, the disease may be rendered asymptomatic or a secondary eruption may appear; or the action of the penicillin on the treponemes may evoke a febrile Herxheimer reaction.

Of the group of 15 patients evaluated, 4 received 50,000 or 100,000 units of penicillin while in the incubation period (cases 1, 2, 3 and 9). Clearly the infection was cured in none, for all 4 cases progressed; 3 went on to the development of a chancre, and the fourth had a symptomless infection. The chancre appeared in the 3 cases approximately 33, 48 and 50 days after the last sexual contact. While these incubation periods are definitely prolonged beyond the average of 21 days, they are well within the upper limit of 90 days. In the fourth case (case 3) no clinical manifestations of syphilis appeared at any time, and the diagnosis was made only by repeatedly positive serologic tests. Prolonged incubation periods, and symptomless infections—Moore [14] estimates symptomless infections at 20 per cent in males and 33 per cent in females—occur even in the untreated syphilitic patient. It will require study of large groups of patients to determine whether subcurative doses of penicillin cause a significantly increased incidence of these clinical phenomena.

In the 11 patients treated during the primary stage of syphilis, the chancres tended to heal and to recur later in most instances. Several developed secondary syphilitic lesions before the disease was recognized. In all there was consequent delay in the diagnosis of syphilis: disappearance of surface treponemes rendered dark field diagnosis difficult, if not impossible, so that in many cases positive serologic tests had to be awaited. However, none of the cases could be construed as examples of relapsing syphilis in the sense that the patients had passed through the secondary stage and then developed mucocutaneous or visceral forms of relapse. Hough [15] has recalled the high incidence of neurologic and other types of relapse observed in the early days of arsphenamine therapy, when one or two doses were believed curative, and he has suggested that a similar situation may arise from inadequate treatment with penicillin. This possibility must be kept in mind, particularly in patients treated for gonococcic urethritis, the doses of penicillin being grossly inadequate for syphilis.

A febrile reaction occurred in 4 cases (5, 6, 7 and 8), and this was interpreted as a systemic Herxheimer reaction due to the treponemicidal action of penicillin. Herxheimer reactions are common in early syphilis with both arsenic and penicillin, and they may be systemic and/or focal. The focal symptoms and signs consist of edema of the chancre and adjacent tissues; pain and swelling in enlarged regional lymph nodes,

14. Moore, J. E.: The Modern Treatment of Syphilis,[2] p. 10.
15. Hough, W. H.: Intensive Treatment of Syphilis, Correspondence, J. A. M. A. **124**: 188 (Jan. 15) 1944.

usually the inguinals, and exaggeration of secondary syphilitic lesions. Of a series of 53 patients with primary syphilis treated at this hospital[16] with 20,000 units of penicillin intramuscularly at three hour intervals, 8 had no fever; 27 had fever from 100 to 102 F., and 18 had temperatures higher than 102 F. Thus, 85 per cent had a febrile Herxheimer reaction, which appeared four to eight hours after the initial dose of penicillin. The high incidence in this group is attributed in part to the careful search that was made for fever, by the recording of rectal temperature at two hour intervals. With the purified penicillin now available, fever as a toxic manifestation, due to contained pyrogens, is extremely rare. We have not observed it among hundreds of patients treated with penicillin for uncomplicated gonococcic urethritis.

There can be little doubt, from the evidence presented in this paper, that subcurative doses of penicillin modify the course of early syphilis. The modification evinced itself in several different ways. There appeared to be prolongation of the incubation period in 3 cases, in 1 the infection was symptomless and in the remaining 11 there was suppression and concealment of the syphilitic lesions. The tendency was to make the disease insusceptible of diagnosis for a longer period than is the rule when it pursues its natural biologic course. Consequently there was greater opportunity for dissemination of the disease, and reduced probability for cure of the patient. However, the fact of greatest importance, which cannot be overemphasized, is shown clearly in the table. In all 15 cases the diagnosis of syphilis was definitely established less than ninety days after penicillin treatment of gonococcic urethritis. It would seem, therefore, that clinical and serologic observation for ninety days from the date of treatment would suffice to detect all but the most exceptional cases of syphilis: this is the present policy of the United States Army.[17]

Every patient treated for gonococcic urethritis should be informed that a concomitant early syphilitic infection may coexist; the patient should be urged to report immediately in the event that a genital lesion or cutaneous eruption appears and should be warned against sexual intercourse until the observation period is completed. The management of the case should include (1) a careful pretreatment inspection for lesions, with repeated dark field examinations, (2) a serologic test for syphilis at the first visit, repeated at least monthly for ninety days, and (3) the recording of the temperature at two hour intervals, during the penicillin therapy, to detect a low grade febrile Herxheimer reaction.

SUMMARY

Of 15 patients treated with 50,000 or 100,000 units of penicillin for gonococcic urethritis while suffering from a concomitant early syphilitic infection, the penicillin appeared to prolong the incubation period of primary syphilis in 3, the syphilitic lesions were suppressed and concealed in 8 and a febrile Herxheimer reaction occurred on the day of penicillin therapy in 4.

In every case the diagnosis of syphilis was proved by demonstration of treponemes in the lesions, or repeatedly positive serologic tests, in less than ninety days after penicillin was administered: on the basis of this, clinical and serologic observation for three months is recommended for all patients.

16. Leifer, William: The Treatment of Early Syphilis with Penicillin, to be published.
17. Treatment of Gonorrhea, United States War Department, Technical Bulletin (TB Med 96), Washington, D. C., Government Printing Office, 1944.

Clinical Notes, Suggestions and New Instruments

RECOVERY FROM PULMONARY MONILIASIS FOLLOWING SERUM THERAPY

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This case of severe pulmonary moniliasis is presented because of the unusual immunologic findings and because of the dramatic recovery which followed the administration of immune serum.

REPORT OF CASE

History.—A. T., a white woman aged 44, married, a housewife, was admitted to Duke Hospital on July 8, 1940 with the chief complaints of malaise, fatigue, cough and loss of weight for the preceding two months. The family history was negative except that one sister had bronchial asthma.

Two years before admission the patient had been ill for five months with symptoms of malaise, fever and cough productive of one-half cupful of white foamy sputum. During her illness she had lost 10 pounds (4.5 Kg.) in weight and was told by her physician that she had a pulmonary infection. She recovered satisfactorily on iodide therapy.

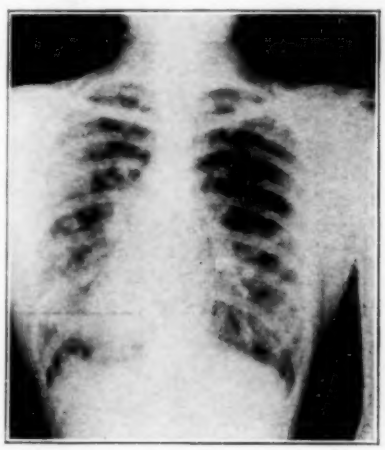

Fig. 1.—Appearance on admission, July 8, 1940.

The present illness began two months before admission with the development of symptoms similar to those of her previous illness, namely malaise, fatigue and a weight loss of 15 pounds (6.8 Kg.). She again had a cough, productive of 1 tablespoon of mucoid, odorless sputum daily. She noted afternoon temperature elevation as high as 39.4 C. (103 F.) but had no frank chills, chest pain, hemoptyses or night sweats. Iodides were administered by her physician but had to be discontinued because of the appearance of a pustular eruption on the face. Three weeks prior to admission she was admitted to another hospital, where she received, over a ten day period, a course of one of the sulfonamides with some subjective improvement.

Physical Examination.—The temperature was 38 C. (100.6 F.), pulse rate 92, respiratory rate 22 and blood pressure 120/70. The patient was emaciated and appeared to be chronically ill but in no acute cardiorespiratory distress. There was a brownish pigmented area over the nose extending to the cheeks, producing a "butterfly" appearance. The tongue was somewhat smooth and reddened, with marginal papillary atrophy. The chest was asthenic, with dulness at the left base and increased tactile and vocal fremitus over this area. Coarse moist rales were present throughout both lung fields. There was no cyanosis and no clubbing of the fingers. The remainder of the examination was normal.

Accessory Clinical Findings.—The hemoglobin was 9.3 Gm., or 60 per cent (Sahli), and the erythrocyte count was 3,920,000 per cubic millimeter. The white blood cell count was 19,000 per cubic millimeter and the erythrocyte sedimentation rate was 31 mm. per hour corrected. Examination of the fresh blood showed anisocytosis, poikilocytosis and the presence of both

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microcytes and macrocytes. The blood Wassermann and Kahn tests were negative. Urine and stool examinations showed no abnormalities.

Candida albicans was isolated from the sputum on numerous occasions. Repeated examinations of concentrated sputum and gastric washings were negative for tubercle bacilli, and guinea pigs inoculated with concentrated sputum remained well. Skin tests were negative to old tuberculin in all dilutions up to 1 mg.

Fluoroscopic and x-ray examinations of the chest showed diffuse densities throughout both lung fields, most likely due to infiltration, with lesions at the left base somewhat coalesced. The x-ray findings were interpreted as being consistent with a diagnosis of a diffuse bronchomycotic infection (fig. 1).

A skin test with a vaccine prepared from a stock culture of candida albicans was negative, and no agglutinins for the fungus could be demonstrated in the serum of the patient.

Course in the Hospital.—The patient continued to be very ill with anorexia, temperature spiking daily to 40 C. (104 F.) and cough productive of white mucoid sputum, which varied in amount from 1 tablespoon to ½ cup every twenty-four hours. The patient was given all the accessory vitamins, iron and various antianemic measures. Intravenous glucose and parenteral vitamins were administered as supportive measures.

Since the patient was known to be sensitive to iodides, gentian violet therapy was begun on July 18, 1940, when she received 2 mg. per kilogram of body weight of the drug intravenously. Subsequently she was given two injections of gentian violet 3 mg. per kilogram and six injections of 4 mg. per kilogram, the last on August 28. After each of the injections the patient complained of substernal oppression, dyspnea and a sensation of choking and smothering, and exhibited decided cyanosis. Gentian violet therapy had to be discontinued because of the symptoms cited and the thrombosis of all accessible veins.

An x-ray of the chest made on September 16 showed a considerable increase in the extent and density of the widespread pulmonary lesions (fig. 2).

The patient coughed up a small amount of bright red blood on August 22. Because of failure to improve on gentian violet therapy, it was decided to try iodides. After negative skin tests and patch tests to potassium iodide, the drug was given orally in an initial dose of 20 drops and the dosage increased 10 drops a day. The drug had to be discontinued on the fifth day because of a severe ioderma involving the face. A transfusion of 500 cc. of citrated blood was given without reaction on September 11.

The patient was again skin tested with an autogenous vaccine of Candida albicans isolated from her sputum, and the reaction was negative. No agglutinins for the fungus could be found in the patient's serum.

Because of a previous experience with a patient suffering from North American blastomycosis[1] who had the same immunologic findings, i. e. negative skin test to Blastomyces vaccine, a negative complement fixation test and a positive immediate reaction to an anti-Blastomyces rabbit serum, it was decided to test this patient with the serum of a rabbit which had been previously immunized with Candida albicans. Injection of 0.1 cc. of the anti-Candida albicans rabbit serum resulted in the formation of a wheal with pseudopodia surrounded by a 5 cm. zone of erythema. Hypersensitivity to rabbit serum was excluded by injection of 0.1 cc. of normal rabbit serum, to which there was no reaction.

The immunologic findings were interpreted as indicating that the patient was flooded with an excess of the fungus antigen, which inhibited both the agglutination reaction and the skin test to the vaccine. The findings suggested also that the administration of immune serum might neutralize the hypothecated excess antigen, permitting the patient's own immune mechanism to become effective.

The patient was given immune anti-Candida albicans rabbit serum subcutaneously, beginning with 0.1 cc. of a 1:10 dilution, and the dose was increased by 0.1 cc. daily until a dose of 0.9 cc. was reached. The desensitization series was repeated twice (beginning October 3 and completed October 26). Following serum therapy there was a total remission of all subjective symptoms. An x-ray of the chest taken on October 22 showed remarkable clearing (fig. 3).

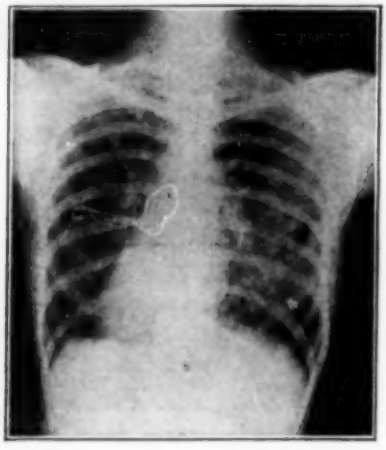

Fig. 2.—Progress of disease, September 16.

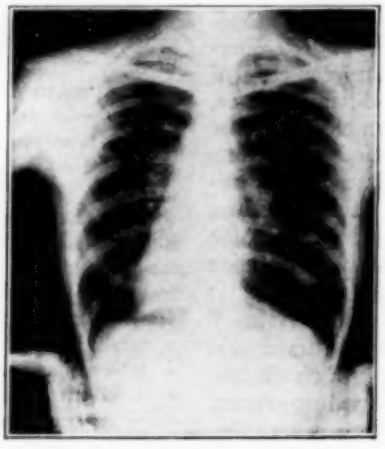

Fig. 3.—Remarkable clearing with immune serum therapy, October 22.

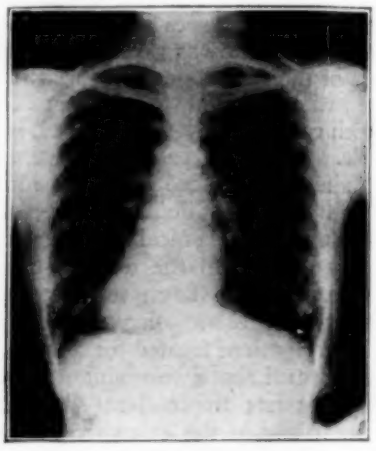

Fig. 4.—Complete clearing, March 31, 1941.

On October 24 an agglutination test showed agglutinins for Candida albicans to be present in a 1:80 dilution of serum. The skin test to vaccine became slightly positive. Retesting with immune rabbit serum gave a slight reaction, which was no greater than that of the normal rabbit serum control. This was interpreted as a negative immune serum test.

The patient was discharged on Nov. 2, 1940 feeling well and entirely symptom free.

Follow-Up.—X-rays of the chest made on Dec. 12, 1940 and on March 3, 1941 were interpreted as essentially normal (fig. 4). The skin test to Candida albicans has remained negative but the agglutinins were still positive in a 1:80 dilution. An electrocardiogram showed no abnormalities.

Subsequently the patient developed mild asthmatic episodes and was found to be sensitive to extracts of Alternaria and Hormodendrum and to oidiomycin. At the present time her asthma is being controlled by desensitization with extracts of these fungi. Several recent cultures from her nose and throat have shown no growth of Candida albicans.

SUMMARY

A patient with severe pulmonary moniliasis showed evidence of an excess of antigen in the tissue and absence of circulating antibodies. She failed to improve with the usual methods of treatment but made a dramatic recovery after the administration of small amounts of immune rabbit serum.

1. Martin, D. S., and Jones, R. R., Jr.: Systemic Blastomycosis, Surgery 10: 939-946 (Dec.) 1941.

Council on Physical Medicine

The Council on Physical Medicine has authorized publication of the following report. HOWARD A. CARTER, Secretary.

RADIUM

ARTHUR U. DESJARDINS, M.D.
and
MARVIN M. D. WILLIAMS, Ph.D.
Rochester, Minn.

Radium as such does not have any therapeutic value. The tissue reactions which follow "radium treatment" are the result of the absorption of energy by the tissue from the radiations emitted by radium and its disintegration products.

Radium is a member of one of the three radioactive series which occur in nature. The atoms of a radioactive element eventually change into atoms of another element, and this change, or disintegration, is produced by the original atom losing mass and energy. The lost mass and energy are in one or more of three forms of radiations, called the alpha rays, beta rays and gamma rays. If all of the energy emitted by 1 Gm. of radium in equilibrium with its disintegration products should be converted into heat, it would amount to about 140 calories each hour; 92 per cent of this energy is from alpha rays, 3.2 per cent from beta rays and 4.8 per cent from gamma rays.

The alpha rays are nuclei of helium atoms which travel at a velocity which may be as high as a tenth of the velocity of light. A helium nucleus has a mass of 4 atomic units and has 2 units of positive electric charge; hence the emission of an alpha ray by an atom reduces its atomic weight 4 units and its atomic number (number of units of positive charge in the nucleus) 2 units. Although the energy of an alpha ray is quite large, it cannot travel far through solid materials; the greatest distance it can penetrate tissue is about 0.1 mm., and through materials of greater density the distance would be even less. The wall of all the ordinary containers used to hold radium or other radioactive materials is thick enough to stop all the alpha rays. Hence, when a radioactive material is enclosed in an applicator during treatment, alpha radiation cannot produce any therapeutic effect.

Beta rays are electrons which travel at a velocity which may be as high as 99 per cent of the velocity of light. An electron has a mass of approximately one two thousandth of an atomic unit of mass and has 1 unit of negative electric charge; hence the emission of a beta ray by an atom does not produce any significant change in its atomic weight, but it increases its atomic number 1 unit. The average energy of a beta ray is of the order of a tenth of the energy of alpha rays. Because of their greater velocity, smaller mass and smaller electric charge, beta rays are much more penetrating than alpha rays. Beta rays can travel through tissue a distance of approximately 10 mm. A thickness of metal sufficient to stop all the beta rays is often called a beta-ray filter, and for the commonly used metals these thicknesses are 0.5 mm. of platinum or gold, 1 mm. of silver or lead, or 2 mm. of brass, monel metal or steel.

Gamma rays are electromagnetic radiations, similar to, but of shorter wavelength than, most roentgen rays, ultraviolet light, visible radiations, radio waves and the like. Of course they, like all electromagnetic radiations, travel at the same velocity as light. The emission of a gamma ray has no effect on the atomic weight or atomic number of an atom, and gamma rays are generally emitted by the same atoms that emit beta rays. In general, the energy of the gamma rays is a little greater than that of beta rays, and they are much more penetrating than either the alpha or beta radiations. One cm. of tissue reduces the intensity of the gamma rays about 5 per cent, a half inch of lead reduces their intensity about 50 per cent, and some of these rays can be detected through 6 inches (15 cm.) or more of lead. Since most applicators containing radioactive materials are enclosed in metal of sufficient thickness to absorb all the beta rays, the therapeutic effect produced by radium treatment is due to the action of gamma radiation on the tissue.

It is not possible to predict when any particular atom of a radioactive element is going to disintegrate, but a definite percentage of the atoms present at the beginning of a period of time will disintegrate during that period. For each radioactive element the rate of disintegration is different and characteristic. Hence the period of time which elapses before half of the atoms disintegrate is called the "half-life period"; this also is characteristic of each radioactive element. The rate of disintegration of an element is not affected by chemical combination, extremes of heat, cold, pressure or vacuum, or by anything which can be done to the element. In the accompanying table is a list of that part of the uranium radioactive series which is of interest to the radiologist; in it will be found the elements in their order of disintegration, the radiations emitted, the half-life periods and other data.

Naturally Occurring Radioactive Elements Which Are Used in Radiology

Element	Atomic Number	Atomic Weight	Physical State	Radiations	Half-Life Period
Radium	88	226	Solid	Alpha	1,590 years
Radon	86	222	Gas	Alpha	3.82 days
Radium A	84	218	Solid	Alpha	3.05 minutes
Radium B	82	214	Solid	Beta and gamma	26.8 minutes
Radium C	83	214	Solid	Beta and gamma	19.7 minutes

If a preparation of pure radium (radium being used as a specific example, although any radioactive element could be used as well) is sealed in a tube, the tube immediately contains other elements; the amounts of these elements will increase for a time, and the amount of radium present will gradually decrease. However, since radium disintegrates very slowly, the amount present will remain essentially constant for many years, and hence the number of atoms of radium disintegrating in any period of time—or, which is the same thing, the number of atoms of radon formed in any period of time—will remain essentially constant for many years. The amount of radon present gradually increases until the number of atoms disintegrating in a period of time is just equal to the number of atoms being formed (number of atoms of radium disintegrating) in the same period. From then on, the amount of radon present decreases as the amount of radium present decreases; the ratio of the amounts of all those present is always the same, and radon is then said to be in equilibrium with radium. In a similar manner, equilibrium eventu-

ally will be established between all succeeding members of the radioactive series. Between radium and radium C, equilibrium is established in about two months, but it takes only about four hours for equilibrium to be established between radon and radium C. The amount of radon in equilibrium with 1 Gm. of radium is called a curie, and smaller amounts are measured in millicuries or microcuries.

Radium is commercially available only in the form of a salt, generally the sulfate, bromide or chloride, and generally a small percentage of the total weight of the preparation is the corresponding barium salt. However, the preparation is described as containing a certain weight of radium, which is the actual weight of the radium element present and not the total weight of the preparation. The actual amount of radium present is determined by comparing the amount of gamma radiation emitted by the preparation (after equilibrium has been established with radium C) with the gamma radiation emitted by a preparation whose radium content is known, or by measuring the rate at which radon is formed. Similarly, the amount of radon contained in a tube is generally measured, after equilibrium has been established with radium C, by comparing the gamma ray emission with that from a tube of radium, since the intensity of the gamma radiation from 1 mc. of radon is the same as the intensity of the gamma radiation from 1 mg. of radium, when the two are in equilibrium with radium C. Most commonly the intensity of the gamma radiation is measured with an electroscope or other suitable instrument by determining the amount of ionization produced in a given volume of air.

Since, in ordinary radium treatment, only the beta and gamma radiations are used, radium B and radium C are the only elements actually needed, because they are the source of these radiations. However, they disintegrate rapidly, and radium or radon is needed as a constant source for supplying radium B. An applicator containing radium will maintain nearly a constant amount of radium B and radium C for many years, while an applicator containing radon decreases in strength approximately a sixth every twenty-four hours, or a half every 3.82 days, and does not have any therapeutic value after about a month because all the radon and radium B and radium C have disintegrated. Since radon is the only gas in the disintegration series, it can be separated rather easily from the rest of the series, and applicators containing radon are frequently used instead of applicators containing radium; so-called "radium therapy" may be given with either type of applicator.

THERAPY

Treatment with radium can do more harm than good. To determine the best method of applying radium and the most suitable dose in each case requires training and judgment, and the best results are obtained only by physicians who have had extended experience. For these reasons, responsibility for treatment of this kind should be limited to qualified specialists.

TECHNIC

Ordinary radium therapy can conveniently be divided into three general types of application: (1) external, (2) intracavitary and (3) interstitial.

In external irradiation the radium applicator is either in contact with the skin or at some distance from the skin. Plaques containing radium, radon bulbs, tubes of radium or radon, and radium bombs are the common types of applicators used for external irradiation.

Plaque applicators usually contain from 5 to 25 mg. of radium embedded in the surface of a glazed material having an area of from 1 to 8 square centimeters. The filter in plaques is very small, seldom more than 0.1 mm. of monel metal; hence most of the beta rays may be used. Plaques are generally placed in contact with the lesion to be treated and are used for surface lesions when irradiation is to be confined to a shallow depth. Although gamma rays also are emitted, their effect on deeper tissue will be very slight during the time the beta rays produce a much greater effect on the superficial tissue.

Radon bulbs are thin walled bulbs of glass, generally less than a centimeter in diameter, containing radon. Since the filtration of the glass wall is very slight, most of the beta rays may be used. Sometimes these bulbs are used instead of radium plaques.

Tubes containing radium or radon generally have walls thick enough to absorb all the beta rays, so that only gamma rays may be used. Walls thicker than a "beta ray filter" make a mechanically stronger tube but reduce the intensity of the radiation. The "active length" (length of radioactive material) is generally about 1 to 2 cm., the overall length of the tubes from 1.5 to 3 cm., the outside diameter from 3 to 7 mm., and the wall thickness 0.5 to 2 mm. platinum equivalent (platinum or sufficient thickness of other materials to give a filtering effect equivalent to that of platinum). Often a few millimeters of rubber, bakelite, wood or similar organic filter is used between the tube and the tissue to absorb the secondary radiation from the tubes. Tubes generally contain from 5 to 100 mg. of radium, or up to several hundred millicuries of radon. Tubes are sometimes placed in contact with the skin, but more commonly they are separated a few centimeters from the skin.

Radium bombs usually contain from 1 to 10 Gm. of radium, which is enclosed in a large block of lead (or other dense metal) with an opening through which radiation can emerge. Filtration is approximately the same as for tubes, but the distance between the radium and the skin usually varies from about 10 to 40 cm.

In intracavitary irradiation the applicators are placed in a natural cavity of the body, usually in order to bring the applicator closer to the lesion to be treated. The most common applicators used are the same radium and radon tubes which are used for external application. The tubes are often enclosed in rubber or similar material to absorb some of the secondary radiation from the tubes and to increase the distance between the tube and the tissue.

In interstitial irradiation the applicators are inserted into the tissue to be treated. Radium or radon needles, containing from 1 to 10 mg. of radium or mc. of radon, with filtration of from 0.3 to 0.5 mm. of gold or platinum are often used. After the desired dose has been given, the needles are removed. Small tubes containing radon are often used, but these are never removed; they contain such an amount of radon, usually from 0.25 to 2.5 mc., that the desired dose will be delivered while all the radon disintegrates. These are commonly called permanent implants, radon seeds, gold implants or gold seeds and generally are made of pure gold having a filter of 0.3 to 0.5 mm., an outside diameter of from 0.75 to 1.15 mm. and a length of from 2 to 6 mm. They also may be made of platinum.

During recent years, in dealing with resistant tumors, the tendency has been to eliminate most or all of the beta rays by using as a filter 0.5 mm. of platinum or an equivalent thickness of some other metal. The reason for this is that beta rays have a decidedly caustic or necrotic effect at short range, that is, on the tissues immediately adjacent to the radioactive substance. This is commonly accompanied by severe pain. Elimination of beta rays by increasing the filtration prevents this necrotic effect and concomitant pain. Lead as a filter is generally employed only to treat superficial lesions.

The dose of radiation delivered to the tissue—the amount of energy absorbed by the tissue from the radiation—depends on the amount of radium or radon used, the length of time of application, the arrangement of the applicators, the filtration and the distance between the source and the tissue. The biologic effect produced by irradiation depends on the dose and many other physical and biologic factors, including the rate at which the energy is absorbed, the volume of tissue irradiated and the dosage distribution throughout that volume, the kind of tissue, the phase of the life cycle of the cells, the blood supply and many other factors.

DOSAGE

The dose is generally expressed in milligram-hours or millicurie-hours, the former being used for radium salts, the latter for radon; the two terms describe practically the same quantity. In ordinary use, however, there will be a slight discrepancy in their values if the change in value of the radon during the time of treatment is not taken into account. If the average value of radon is used, this discrepancy is practically eliminated for any normal period of treatment. To describe a treatment completely, the amount of radium or radon, the time of application, the filtration, the distance from the lesion and the type of applicator should be given. Confusion in the literature with regard to dosage is due to lack of care in recording these points; the older writers based the dose on the product of the period of application by the quantity of crystallized radium bromide ($RaBr_2 + 2H_2O$), which contains 53.6 per cent of radium element, instead of on the product of the period of application multiplied by the quantity of radium element; and this resulted in an error of about + 40 per cent. Regaud of France described the dose, when radon is used, as the quantity of radon destroyed. This he defined as the difference between the amount of radon in the applicator at the beginning and at the end of the period of irradiation. For a radium applicator this is equal to the milligram-hours multiplied by the hourly rate of decay of radon, which is 0.0075. These methods of expressing the dose are slowly being superseded by a simpler method in which the dose is stated in roentgens (the unit originally adopted for expressing roentgen dosage).

The roentgen (usually represented by r) is a measure of the amount of energy absorbed from the radiation; hence it takes into account the amount of radium or radon, time, arrangement, distance and filter (the dosage rate, at a distance of 1 cm. from a point source of 1 mg. of radium filtered by 0.5 mm. of platinum, is approximately 8.4 roentgens each hour). When the entire dose is given within a few hours, about 1,000 roentgens of gamma radiation is required to produce an erythema of the skin. Among advanced workers there is an increasing tendency to express radium dosage in roentgens, but at the present time methods of measurement have not yet been perfected and simplified sufficiently to make this a general rule.

The maximal safe dose of radiation which a person may receive day after day, called the "tolerance dose," is generally considered to be about 0.1 roentgen each day. The dose received by persons working with radioactive materials should be measured by having them carry on their person photographic film or suitable dosage measuring instruments. When the dose which they receive is near or more than the tolerance dose, added protection should be provided. It is advisable also to have frequent studies made of the blood of the personnel, for some of the earliest tissue changes produced by irradiation are indicated by changes in the blood.

BIOLOGIC CONSIDERATION

The action of radium rays on tumors depends on the kind of cells of which the tumor is chiefly composed. Each variety of cell in the body has a specific range of sensitiveness to the rays, and the sensitiveness of neoplasms corresponds closely to that of the normal cells from which the tumor is derived. The sensitiveness of cells appears to depend chiefly on their life cycle or mitotic activity. Radium rays appear to act mainly on the genetic elements (chromatin material of the nucleus) of the cells and thus may cause cellular activity to be inhibited or to be completely arrested and the cells to be injured or to disintegrate completely, the rate of effect varying with each variety of cell and with the age of the cells.

The primary biologic effect of irradiation is one of cell injury. When the degree of injury is small, the tissue eventually may be able to recover from it. Hence, in general, it is undesirable to irradiate normal tissue, and precautions should be taken to irradiate as little normal tissue as possible while treating a lesion. Precautions must be taken to protect the personnel working with radioactive materials from receiving enough radiation to produce permanent tissue damage in their own bodies.

As already mentioned, the action of radium rays on pathologic lesions depends on the sensitiveness of the particular varieties of cells affected. This applies to benign, inflammatory and malignant processes. The leukocytes, especially the lymphocytes, and polymorphonuclear and eosinophilic leukocytes, are the most sensitive of all human cells. Next in sensitiveness come the mucus producing cells in the basal epithelium lining the acini of the salivary glands, pulmonary bronchi, stomach and intestine. The basal epithelial cells (spermatogonia) of the testis and ovary come third in the order of sensitiveness and account for the susceptibility to irradiation of the respective genital glands. Young connective tissue cells are comparatively sensitive, and mature connective tissue cells are comparatively insensitive to irradiation. Less and less sensitive, or more and more resistant, to the direct action of the rays are cartilage cells, muscle cells, bone cells, fat cells and finally nerve cells. In the eye the two most sensitive structures are the conjunctiva and the epithelium of the crystalline lens. Doses of radiation insufficient to cause an inflammatory reaction of the eyelids are not likely to cause the conjunctiva or the lens to react. Doses sufficient to produce conjunctivitis may lead to the formation of cataract months or years later, especially in children. As far as tumors are concerned, those composed chiefly of lymphocytes are extremely sensitive and retrogress rapidly after exposure to the rays. Tumors derived

from the spermatogonial cells of the testis (seminoma or embryonal carcinoma) also are sensitive, though less sensitive than growths incidental to Hodgkin's disease, lymphosarcoma or lymphatic leukemia. Among bone tumors, diffuse endothelioma (Ewing) is quite sensitive, chondrosarcoma moderately sensitive and osteogenic sarcoma quite resistant to irradiation.

INTRAVENOUS AND ORAL ADMINISTRATION

When taken internally over a certain period of time, solutions of radium may have a deleterious effect on the blood corpuscles. Under these circumstances the radioactive element is eliminated chiefly through the bowel and kidneys, but a small proportion is disseminated through the body and finally lodges in bones, the radioactivity of which may therefore increase considerably. In time these radioactive deposits may lead to bone sarcoma; therefore solutions of radium, when used to treat internal diseases, should be used with caution and only for a limited time.

When solutions containing radon are taken internally, the emanation is rapidly lost from the body, a large proportion escaping during the process of drinking and the remainder being eliminated through the bowel.

Solutions of radium chloride, and radon (radium emanation) contained in drinking water, constitute the chief methods of oral administration; intravenously, radium chloride solution is generally used. The evidence available on the effect of solutions containing radium or radon (radium emanation) in the treatment of disease is in general not well controlled and such solutions, therefore, are of doubtful value. Certainly there is no basis for the use of radium or radon (radium emanation) in conditions such as anemia, habitual constipation, glycosuria, sexual impotence, glandular inefficiency or for purposes of rejuvenation in general. It is noteworthy that many of the conditions in which radon is recommended are chronic conditions in which any new method of treatment may seem temporarily beneficial.

The daily administration of radon (radium emanation) has been reported to give beneficial results in various conditions, including infections, acute articular rheumatism, endocarditis, chronic arthritis, neuritis, hypertension, thromboangiitis obliterans and arthritis deformans. Many of the so-called emanators and activators on the market impart such small amounts of radon (radium emanation) to the water which contains them that their effect, if any, is probably psychic. Commercial exploiters of mineral springs have made much of the radioactive content of the water and have attributed therapeutic benefit to this factor. In most cases the radioactivity of spring water is very small and probably has nothing to do with the therapeutic effects noted.

Solutions of radium chloride are given in doses of from 10 to 50 micrograms. Radioactive substances introduced intravenously are eliminated largely through the bowel and kidneys, and excessive doses may produce degeneration of renal cells and hyperemia and hemorrhage of the mucosa of the colon.

From an examination of the available evidence it would appear that the value of the internal use of radium solutions or of water containing radon, in chronic arthritis, gout, neuritis and high blood pressure, has not been demonstrated by controlled clinical evidence; in spite of many years of trial, acceptable evidence has not become available, and until better evidence becomes available the Council on Physical Medicine has decided not to accept generators for the production of water charged with radon or radium solutions intended for intravenous use.

RESULTS OF TREATMENT IN PATHOLOGIC CONDITIONS

Radium treatment is often effective in myelogenous and lymphatic leukemia. In the former, topical application of radium over the region corresponding to the enlarged spleen usually causes the organ to diminish in size rapidly, and the leukocytes undergo a corresponding reduction in number. In some cases, irradiation of the spleen alone is not sufficient and the long bones also must be treated. Irradiation of the long bones or of the lymph nodes in lymphatic leukemia is best carried out with roentgen rays rather than radium. In many cases a substantial improvement in the general condition accompanies the reduction in size of the spleen and superficial nodes and the fall in the leukocyte count. Acute leukemia does not respond well to irradiation, but in the more chronic forms irradiation usually leads to prolonged remission of symptoms, although treatment may have to be repeated at varying intervals from time to time. When the spleen has been irradiated many times, it tends to become fibrous and radium gradually loses its effect. In cases of severe anemia, exposure to radium should be repeated with caution; otherwise there may be danger of increasing the anemia. Radium is applied for varying lengths of time over the spleen and superficial lymphatic enlargements only or in conjunction with irradiation of the long bones. Usually a total exposure of successive areas for twenty-four hours at one time is sufficient. This may be repeated at intervals of one week or longer, depending on the exact dose given. During the past few years, phosphorus, when made artificially radioactive by a cyclotron and when given intravenously, has been found to yield results which are superior to those obtained by radium applied to the surface of the body.

In menorrhagia and metrorrhagia, which are often concomitants of fibroid disease of the uterus, radium therapy is frequently of real value. It is accomplished best by intrauterine application, although sometimes the radium may be placed in the posterior vaginal fornix and supplemented with distance screening over the fundus. In young women the dose should be controlled so that a premature menopause does not occur. A universal tube applicator containing 25 to 50 mg. of radium in the form of radium sulfate, filtered through 0.5 mm. of silver and 2 mm. of gum rubber, and placed in the uterine cavity for fourteen hours, will bring on amenorrhea in most cases. If necessary, the treatment may be repeated after an interval of six months. In young women, in whom permanent amenorrhea is to be avoided, a fourth to a half of this dose is often sufficient.

Lymphadenoma; lymphosarcoma and mediastinal and abdominal growths of a sarcomatous nature are often reduced in size by the application of radium, with concomitant improvement in the general condition.

The sensitiveness of malignant tumors of bone varies according to the susceptibility of the essential cells of the tumor. Thus diffuse endothelioma, otherwise known as endothelial myeloma, is quite sensitive, and the rate of regression of this tumor corresponds to that of the chronic form of lymphosarcoma and Hodgkin's disease. Chondrosarcoma is rather resistant, its rate of regression depending on the proportion of young cartilage cells in the tumor. True osteogenic sarcoma is com-

paratively resistant to irradiation. Some of these tumors may undergo a measure of regression after exposure to radium, but the regression is seldom pronounced and practically never complete.

Carcinoma involving certain organs responds well to the application of radium. In carcinoma (not adenocarcinoma) of the uterine cervix, the results obtained by expert workers are at least equal to those which follow surgical intervention. Carcinoma of the thyroid gland also is comparatively sensitive. On the contrary, adenocarcinoma, wherever situated, tends to resist irradiation. Carcinoma of the gastrointestinal tract is seldom greatly influenced by radium treatment.

Radium treatment is of considerable value in bringing on shrinking and fibrosis in tuberculous adenitis.

Improvement has been noted in certain skin diseases when treated with radium rays; for example, lichenified eczema, epithelioma and keratosis, psoriasis, xanthoma, localized mycosis fungoides and fibroma.

Lupus vulgaris, when all other treatment has failed, is sometimes favorably influenced by radium.

In cavernous nevus the course of the disease is favorably influenced. The treatment is lengthy and tedious. Overexposure should be avoided, especially about the face, for it brings about scarring. Much care and experience are needed in order to obtain good results.

The removal of warts and papillomas and the treatment of pyogenic granulomas by radium are generally successful. If the exposure is timed properly, involution occurs in from three to four weeks.

Good results have also been reported in the treatment of conditions which often follow injuries, such as keloids, painful scars and fibrous adhesions.

Moles, especially of the pigmented variety, should not be irradiated. They can be destroyed by means of high frequency current or they can be excised surgically.

For many years certain concerns which deal in radium and its emanation products have made it possible for any physician to rent radium or radon and to use it in the treatment of some of their cases. This service was probably provided to meet a considerable demand on the part of physicians who did not realize that the use of these radioactive agents by physicians who have not had special training and experience is fraught with considerable danger, and the results of treatment under these conditions are not likely to be as good as they should be. For this reason the attitude of the Council on Physical Medicine has been and still is that the rental of radium or radon to physicians who have not had special training and experience should be discouraged.

Mental Changes.—Coma is a state of complete unresponsiveness to the environment. The patient's reactions are limited to elemental reflexes, and even some of these are impaired. Semicoma is a condition in which there is responsiveness to some of the elemental mental functions, such as calls by name, reacting to noise and reacting to a visual threat. There is no significant defect in the elemental reflexes. Stupor is a condition of greater awareness where the patient has no defect in elemental reflexes, responds to elemental mental functions and, in addition, reacts to verbal commands, having an ability to execute simple things, such as shutting the eyes and sticking out the tongue. Confusion is a state in which there is only a mild disturbance in the state of consciousness. The elemental reflexes, elemental mental functions and reactions to simple commands are usually intact. These patients present chiefly orientation difficulties.—Wortis, S. Barnard; Herman, Morris, and London, Jack: Mental Changes in Patients with Subdural Hematomas, in Trauma of the Central Nervous System, Baltimore, Williams & Wilkins Company, 1945.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

AUSTIN SMITH, M.D., *Secretary.*

CONTRACEPTIVE JELLIES AND CREAMS (See New and Nonofficial Remedies, 1945, p. 355).

The following articles have been accepted:

DUREX PRODUCTS, INC., NEW YORK

Lactikol Creme: A water dispersible nonfatty stearic acid and glyceryl monostearate cream, having a p_H of 4.9, prepared from the formula:

	Per Cent
Stearic acid	15.00
Glyceryl monostearate	7.50
Glycerin	8.00
Glyceryl monoricinoleate	1.50
Sodium lauryl sulfate	0.50
Lactic acid	0.50
Perfume	0.07
Water sufficient to make	100.00

Actions and Uses.—(See article Contraceptive Jellies and Creams.)

Dosage.—5 cc.

Lactikol Jelly: A water soluble jelly formed from tragacanth, karaya and acacia, having a p_H of 4.15, prepared from the formula:

	Per Cent
Tragacanth	2.70
Karaya	1.00
Acacia	1.00
Lactic acid	1.50
Glycerin	16.00
Glyceryl monoricinoleate	1.00
Sodium lauryl sulfate	0.20
Butyl ester of parahydroxy benzoic acid	0.02
Oxyquinolin sulfate	0.05
Perfume	0.04
Water sufficient to make	100.00

Actions and Uses.—(See article Contraceptive Jellies and Creams.)

Dosage.—5 cc.

SYRINGE APPLICATORS FOR CONTRACEPTIVE JELLIES AND CREAMS (See New and Nonofficial Remedies, 1945, p. 357).

The following articles have been accepted:

DUREX PRODUCTS, INC., NEW YORK

Lactikol Plunger Applicator: A transparent plastic tube threaded at the blunt intravaginal end to screw onto the tubes of Lactikol Creme and Jelly to permit filling by compression of the tube. The full capacity is 5 cc., the recommended dose.

Lactikol Metri-Dose Applicator: A transparent glass tube graduated to permit delivery of from 5 to 8 cc., slightly constricted at the intravaginal end to permit filling, and fitted at the distal end with a rubber compression bulb with central wire spring device to permit adjustment of the volume of jelly or cream to be delivered.

THIAMINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1945, p. 610).

The following additional dosage form has been accepted:

SCHIEFFELIN & CO., NEW YORK

Tablets Thiamine Hydrochloride: 3 mg.

ASCORBIC ACID (See New and Nonofficial Remedies, 1945, p. 622).

The following additional dosage form has been accepted:

SCHIEFFELIN & CO., NEW YORK

Tablets Ascorbic Acid: 100 mg.

HEXESTROL (See New and Nonofficial Remedies, 1945, p. 435).

The following dosage form has been accepted:

ORTHO PRODUCTS, INC., LINDEN, N. J.

Tablets Hexestrol: 1 mg. and 3 mg.

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SATURDAY, JANUARY 26, 1946

VACCINATION FOR INFLUENZA

Recently Salk and his colleagues [1] reported the efficacy of vaccination against influenza, using a preparation which contained larger quantities of virus than usually employed, with the purpose of producing a higher degree of immunity. More than 2,000 persons at the Ypsilanti State Hospital in Michigan were studied. At the Eloise Hospital Infirmary 5,737 persons were involved. At the Ypsilanti State Hospital alternate persons in certain wards who were selected for study received a subcutaneous injection of 1 cc. of the virus vaccine or a similar inoculation of control material. One thousand and thirty-five were given the vaccine and 1,051 received the control inoculation. This took place on Dec. 21 and 22, 1942. Between Jan. 5 and 12, 1943 2,879 received the vaccine and 2,858 received control material at the Eloise Hospital and Infirmary. Blood for serologic study was obtained from approximately 10 per cent of the vaccinated group at the time of vaccination and again two weeks later. The vaccination raised the antibody titers of the majority beyond the range of the group prior to vaccination. Thus, prior to inoculation the type A antibody titers higher than 256 were found in only 6 per cent of patients, whereas 71 per cent had titers of this level or more after vaccination. Similarly, type B antibody titers of 256 or higher were found in only 10 per cent before inoculation but in 78 per cent postvaccinally.

A special effort was made to determine the duration of increased antibody titer. Bleedings were carried out at intervals of two weeks, four months and one year. For the type A virus the results could be summarized as follows: Antibody titers of 256 or more were found in 15 per cent of the group before vaccination, in 83 per cent two weeks later, in 69 per cent four months later and in 66 per cent at the end of a year. For the type B virus similar levels of antibody titers were found in 6 per cent before vaccination and in 82 per cent, 70 per cent and 57 per cent at the corresponding intervals after vaccination.

Nearly a year after vaccination an epidemic of influenza A occurred in the general population adjacent to the Ypsilanti State Hospital. Several of the ward attendants acquired influenza about two weeks before the disease became manifest among the inmates. When the vaccination study was begun not all wards had been included, and in those in which vaccinations were done only one half received the virus vaccine, the remainder having been inoculated with control material. In the intervening year the changes in composition in the wards were comparatively slight. Consequently a program of case finding was instituted. Influenza was frequent in some of the wards; in these wards the population was essentially unvaccinated. In the group of "vaccinated" wards, about 40 per cent of the residents of which had been vaccinated, the incidence of influenza seemed to be definitely limited either because cases did not occur or because those which did appeared sporadically.

The investigators presented evidence also that the vaccine used remained stable for more than a year when stored in a refrigerator. This was shown by mouse protection tests and the capacity to induce a rise in antibody level in human beings similar to that obtained by fresh vaccine.

The laboratory evidence of prolonged antibody rise following influenza vaccination, the appearance of an epidemic of influenza about a year after inoculation and the epidemiologic pattern taken by the disease strongly suggest that vaccination as long as a year old may prevent or at least limit outbreaks which might have been severe in certain segregated institutional groups. Further progress in the preparation of potent and long lasting vaccines and in technics of administration are doubtless impending.

1. Salk, Jonas E.; Pearson, Harold E.; Brown, Philip N.; Smyth, Charley J., and Francis, Thomas, Jr.: Immunization Against Influenza, with Observations During an Epidemic of Influenza One Year After Vaccination, Am. J. Hyg. **42**: 307 (Nov.) 1945.

NUTRITIONAL ANEMIAS IN CHILDREN

The significance of nutritional factors in the etiology of the anemias of children has been reemphasized in recent investigations. The importance of dietary protein,[1] of the B vitamins [1] (possibly folic acid in particular) and of iron [2] has been stressed in current studies. In one severely anemic infant with an allergy to cow's milk, for example, the administration of food containing "protein" in the form of amino acids [1] was followed by a prompt recovery. Subsequent studies will probably confirm the therapeutic need and value of additional dietary protein in some chronic cases of anemia in children.

Investigations of the identity of the B vitamin or B vitamins involved in the nutritional anemias of infancy

1. Bass, M. H.: Deficiency Anemia in Infants, Am. J. Dis. Child. **67**: 341 (May) 1944.

2. Abbott, O. D., and Ahmann, C. F.: Iron Deficiency Anemia in Children, Am. J. Dis. Child. **58**: 811 (Oct.) 1939.

have not proceeded far enough to permit conclusions. However, the administration of liver preparations [1] produced a dramatic recovery from the anemia in one child thus treated. This factor may be folic acid and thus identical with that which apparently benefits certain types of macrocytic anemias in the adult.[3] Further studies of this important practical problem will be awaited with interest.

As is well known, a lack of iron may also be involved in the etiology of the nutritional anemias of children. This problem seems to be somewhat more acute in certain areas of the country where "endemic anemia" from iron deficiency has been described.[2] This observation has been confirmed in more recent studies of hemoglobin values in rural school children in Florida.[4] Of a total of 2,205 children from 6 to 18 years of age examined, 42.3 per cent were distinctly anemic, having hemoglobin values ranging from 3.6 to 11.4 Gm. per hundred cubic centimeters, 35.8 per cent were subnormal (11.4 to 13.6 Gm. per hundred cubic centimeters) and only 21.9 per cent were considered normal (above 13.5 Gm. per hundred cubic centimeters). A lack of dietary iron was shown to be the primary deficiency in these cases, since rapid hemoglobin regenerations followed the administration of iron salts.

These observations again emphasize the importance of proper nutrition, especially with respect to protein, the B vitamins and iron, in maintaining normal hemoglobin formation in the growing child.

HAZARD OF ANOXIA IN NITROUS OXIDE ANESTHESIA

Anesthesia by inhalation of nitrous oxide gas presents a number of advantages such as the prompt and pleasant induction of sleep and the rapid elimination from the body. The gas has not been found to have a toxic effect on any tissue. The single serious imperfection of nitrous oxide is its lack of potency. When given with a concentration of oxygen found in air, nitrous oxide will not produce a degree of narcosis in many persons that meets the requirements of surgical anesthesia. To overcome this difficulty McKesson in 1911 introduced the principle of fractional rebreathing into gas anesthesia and a new technic in which induction of anesthesia was accomplished with undiluted nitrous oxide and the saturation technic. When saturation is practiced, 100 per cent nitrous oxide is continued to the point of profound asphyxia and respiratory arrest. At this point, if the pulse becomes irregular or slow, oxygen is given under pressure sufficient to inflate the lungs. After the single inflation of lungs with oxygen, an anesthetic mixture is provided to maintain narcosis and the necessary degree of muscle relaxation. If in the course of the operation this mixture proves inadequate to maintain relaxation, the asphyxial procedure is repeated as a secondary saturation.

McQuiston and his co-workers [1] maintain that a mixture of 20 per cent oxygen and 80 per cent nitrous oxide may be used without causing serious anoxemia. In their analyses of blood gases in patients who received nitrous oxide anesthesia they found that any appreciable reduction in oxygen below 20 per cent may become extremely dangerous to the patient. In all their experiments, when the proportion of oxygen in the inspired gases was below 13.7 per cent, the arterial oxygen tensions were in the range of extreme asphyxia, 30 mm. of mercury. These experiments make it obvious that the administration of nitrous oxide is often accompanied by anoxemia and that the degree of anesthesia is more dependent on the reduction of oxygen than on an increase of concentration of nitrous oxide.

The important contribution of Courville,[2] based on a study of 13 cases 9 of which terminated fatally, demonstrates most emphatically that nitrous oxide-oxygen anesthesia may cause serious and even fatal results. A patient may die during the anesthesia with absence of any pathologic lesions at necropsy sufficient to account for death. The cause of death in this type of case has been ascribed to status thymicolymphaticus, idiosyncrasy or anoxemic depression of the respiratory center. In a second group described by him, the patient may survive for hours or months and then succumb. Cases corresponding to this classification are numerous, and most anesthetists with wide experience are familiar with one or more in their own or in the practices of others. Immediate nervous manifestations usually consist of generalized convulsive seizures, muscular rigidity and persistent coma, at times terminating fatally with signs of "decerebrate rigidity." Delayed symptoms may occur in the form of a psychosis, the parkinsonian symptom complex or disturbance of special sensation, particularly in the form of a partial or complete amaurosis. The patient may recover entirely after an anoxemic episode, may survive for a variable period with residual symptoms or may die within a few days. Similar cases were reported by Lowenberg, Waggoner and Zbinder, O'Brien and Steegman, Stewart and others. The only conclusion to be drawn from the cases reviewed is that the consequences of nitrous oxide anesthesia are due to the accompanying anoxia. Certain contributory conditions have been recognized in the production of anoxemia, such as pulmonary lesions, diminished cardiac reserve and hyperthermia.

3. Spies, T. D.; Vilter, C. F., and Koch, M. B.: South. M. J. **38**: 707 (Nov.) 1945.
4. Abbott, O. D.; Townsend, Ruth O., and Ahmann, C. F.: Hemoglobin Values for 2,205 Rural School Children in Florida, Am. J. Dis. Child. **69**: 346 (June) 1945.

1. McQuiston, W. O.; Cullen, S. C., and Cook, Evelyn V.: Arterial Oxygen Tension with Nitrous Oxide Anesthesia, Anesthesiology **4**: 145 (March) 1943.
2. Courville, C. B.: Asphyxia as a Consequence of Nitrous Oxide Anesthesia, Medicine **15**: 129 (May) 1936.

Barach and Rovenstine[3] stress that, except in the presence of these specific conditions, methods are not available for distinguishing between persons who may suffer severely from brief bouts of anoxia and those who will recover fully after prolonged oxygen want. They believe that the mortality and morbidity from nitrous oxide-oxygen anesthesia as practiced in offices is much greater than is generally known. Protection of the public against death or permanent impairment of mental functioning from anoxia demands widespread dissemination of the fact that asphyxia of even very short duration must be regarded as a grave hazard to the great majority of persons. They propose that nitrous oxide-oxygen anesthesia should not be administered with an oxygen percentage of less than 20. Should anesthesia with a 20 per cent oxygen-80 per cent nitrous oxide mixture prove not sufficiently deep, other technics should be used rather than resort to asphyxia or even so-called moderate anoxia. Cylinders containing 80 per cent nitrous oxide and 20 per cent oxygen will provide an unvarying concentration of these gases with a cylinder pressure of 700 pounds. They feel that the increased cost of such mixtures should not be made the basis of permitting a practice that is dangerous as well as unphysiologic.

Current Comment

HOSPITAL RESIDENCIES UNDER THE G. I. BILL

For some time a subcommittee of the Committee on Postwar Medical Service has been seeking a clarification of the educational provisions of the G. I. Bill of Rights as they might apply to hospital residencies, which are being sought by physician veterans in great numbers. Elsewhere in this issue is an explanation of the manner in which this law will operate in the case of residencies, whether or not the hospital is affiliated with a medical school. Important questions raised repeatedly have been: Is a hospital offering an acceptable residency program eligible to participate? Are physician veterans eligible for subsistence benefits while pursuing such a course of study? May a veteran commence his residency training while on terminal leave? These questions are now answered in the affirmative, with certain qualifications fully described in this statement, which was approved by the Central Office of the Veterans Administration. It can serve as a useful guide to hospitals and physician veterans alike, since all necessary procedures are described in detail. The modified provisions of the new law, passed in December 1945, are included. Certain of these were advocated to Congress by the Committee on Postwar Medical Service and its subcommittee. It is now not necessary for a physician veteran of any age to prove that his education was interrupted to become eligible; more satisfactory arrangements for tuition payments for short courses are provided; tuition and subsistence benefits will not be charged against the veteran's bonus, should one be voted later by Congress; and the subsistence benefits are increased.

PRESCRIPTION WRITING

The best medical treatment is that fitted to the individual patient. Drug therapy, highly significant in most medical treatment, is secured by the prescription. As Sollmann aptly says, a prescription is "an order for medicine sent by a physician to a pharmacist." Some of the practical requirements for writing an effective and correct prescription are often neglected. The instructions for the pharmacist and patient must be legible and intelligible; this is why English is now preferred to Latin. The prescriber should use correct, descriptive names for the ingredients and not just their trade names; such description insures fewer misunderstandings. If an ingredient is official or otherwise open to manufacture by several firms, a firm name should be placed adjacent to the ingredient if the physician wishes to show his confidence in any one manufacturer; otherwise any brand may be used to fill the prescription. The use of English abbreviations and numbers as designations for drugs should be avoided. Complex mixtures should not be ordered if simple ones will suffice. Unrelated substances such as purgatives and hypnotics are not properly included in a single prescription. They are best prescribed separately and timed in their administration to be most effective. The physician should be mindful of the frequency with which prescriptions are refilled without his knowledge. Thus he may limit the number of doses to the actual needs of the patient and state specifically on the prescription whether it can be refilled and, if so, how often. The importance of such directions, for example when barbituric acid compounds are prescribed, is obvious. Of course the pharmacist bears the responsibility of filling the prescription; when he is in doubt concerning the ingredients or directions, it is his moral responsibility to call the prescribing physician; to do otherwise invites disastrous results.

ADVANCES IN MALARIAL RESEARCH

A report in the January 4 issue of *Science* of the Board for the Coordination of Malarial Studies[1] lists a number of significant advances in the study of malaria. Studies on immunity in the avian infections have given information on the cross immunization which obtains with different species of parasites. The studies on immune response of human subjects to malarial antigen have been disappointing either in the prevention or modification of the disease or in the production of complement fixing antibodies which might be useful in differentiating between a latent infection and a cure in vivax malaria. A great number of chemical compounds have been investigated for antimalarial activity in various avian infections and in human malaria. Among the

3. Barach, A. L., and Rovenstine, E. A.: Hazard of Anoxia During Nitrous Oxide Anesthesia, Anesthesiology **6**: 449 (Sept.) 1945.

1. Board for the Coordination of Malarial Studies: Wartime Research in Malaria, Science **103**: 8 (Jan. 4) 1946.

practical advances resulting from these studies may be mentioned: 1. The development of better methods for the use of quinacrine (atabrine) in the suppression and treatment of malaria, which led to the demonstration that this compound is superior to quinine. 2. Development of compounds superior to quinacrine. Among these are several members of the 4-aminoquinoline series. In this group SN7618, 7-chloro-4-(4-diethylamino-1-methylbutylamino) quinoline, has received the most extensive study, both in civilian and in military establishments. This compound is an effective suppressive when administered no more frequently than once a week in a well tolerated dose. It will also cause an abrupt termination of the clinical attack of vivax malaria and will cure falciparum malaria when administered for only one or two days. It does not discolor the skin, as does quinacrine, nor does it give the disagreeable gastrointestinal symptoms which are sometimes seen with the administration of quinacrine. 3. The exploration of the 8-aminoquinolines. The field of investigation of suppressive drugs has been extended, the major emphasis being focused on the study of the 8-aminoquinolines with the hope of discovering a nontoxic curative agent. This line of investigation received impetus from published reports of British investigation of pamaquin (plasmochin) in vivax malaria. Curative action of pamaquin was demonstrated in vivax malaria due to both domestic and Southwest Pacific strains of P. vixax.

VITAMIN CONTENT OF HUMAN MILK

Since milk is the basic food of the infant and many babies are raised on formulas containing cow's milk adjusted to resemble human milk, a knowledge of the complete chemical composition of both types of milk is desirable. The content of all the grosser constituents such as fat, carbohydrate, protein and minerals is well known. Recently Macy and her associates [1] have added to our knowledge of the vitamin content of human milk. In this series of studies the newer microbiologic and chemical procedures were used to determine the concentrations of vitamin A, ascorbic acid, nicotinic acid, biotin, pantothenic acid, thiamine and riboflavin in twenty-four hour samples of human milk. This period of collection was adopted to remove the possibility of diurnal variations. For this study a number of pregnant and lactating women were either given special diets of high vitamin content or allowed to choose their own diets. It was found that the vitamin content of the milk from those women who choose their own diet was lower than those on the planned diets, although the differences were small. Using the values for the vitamin content of human milk which were obtained by the Detroit group, Maynard and his co-workers [2] made comparisons with the vitamin content of cow's milk. Human milk was found to be higher than bovine milk in regard to ascorbic acid, nicotinic acid and inositol. Cow's milk was found to contain more thiamine, riboflavin, pyridoxine, biotin and pantothenic acid than human milk. A factor to be taken into consideration when comparing these values is that the normal commercial processing and delivery of cow's milk may cause considerable loss of the riboflavin and ascorbic acid activity.

1. Macy, Icie G.; Williams, Harold H.; Pratt, J. P., and Hamil, Brenton M.: Human Milk Studies, Am. J. Dis. Child. **70:** 135 (Sept.) 1945.

2. Lawrence, John M.; Herrinton, B. L., and Maynard, L. A.: Human Milk Studies, Am. J. Dis. Child. **70:** 193 (Sept.) 1945.

PULMONARY INSTILLATION OF PENICILLIN IODIZED OIL

Bryson,[1] Barach [2] and others have shown that penicillin aerosol penetrates the lungs and that respiratory penicillin may be recovered from the urine. The aerosol method of pulmonary therapy, however, necessitates four or five inhalations daily to maintain effective quantities of penicillin in the lungs. Radiographic control of the location of the therapy is impossible. Romansky and his associates [3] of the Walter Reed General Hospital therefore tested the feasibility of pulmonary instillations of penicillin in iodized oil. Calcium penicillin was thoroughly blended with 40 per cent iodized oil, the resulting mixture containing 1,500 Oxford units per cubic centimeter. Stability tests showed that penicillin remains suspended in the mixture and does not settle out or deteriorate even after sixty days storage at room, incubator or refrigerator temperature. Under radiographic control from 1 to 3 cc. of this mixture was injected through the trachea into the bronchi of 8 rabbits. Blood levels varying from 0,039 to 1.25 Oxford units per cubic centimeter were found during the next two hours, the titer depending on the amount of the penicillin injected. Gross and microscopic studies of the lungs and other organs two months later showed no abnormalities that could be attributed to this form of therapy. Ten patients with severe saccular bronchiectasis and 2 with pulmonary abscess were selected for clinical trial. The lesions in all 12 cases were confined to a single lobe. After preliminary cocainization of the posterior pharynx, from 7 to 10 cc. of penicillin iodized oil was introduced into the diseased lobe of each patient, fluoroscopic visualization furnishing an accurate check of the localization of the injected material. Immediate or subsequent discomfort due to the mixture was not observed. In most cases, assayable levels of penicillin were found in the blood during the first three hours after the instillation. In all patients, penicillin continued to be excreted in the urine for at least twenty-four hours. In certain cases a gradual reduction in the amount of sputum to approximately 50 per cent of the original amount occurred by the seventh day. Romansky believes that the chances of curing far advanced bronchiectasis, lung abscesses or any other type of chronic pulmonary suppuration by this method are remote. He is convinced, however, that there is a distinct possibility that the bacterial flora of diseased lungs may be altered by such local therapy so as to make subsequent surgical intervention safer. Further studies of therapeutic possibilities are in progress.

1. Bryson, Vernon; Sansome, Eva, and Laskin, Sidney: Science **100:** 33 (July 14) 1944.

2. Barach, A. L.; Silberstein, F. H.; Oppenheimer, Enid T.; Hunter, Thomas, and Soroka, Max. Ann. Int. Med. **22:** 485 (April) 1945.

3. Romansky, M. J.; Dugan, D. J., and Rittman, G. E.: Science **102:** 255 (Sept. 7) 1945.

MEDICINE AND THE WAR

HOSPITAL RESIDENCIES UNDER THE G. I. BILL

This statement by a subcommittee on veterans' affairs of the Committee on Postwar Medical Service was compiled for the information of approved residency hospitals and physician veterans by that subcommittee, the Council on Medical Education and Hospitals and the Bureau of Legal Medicine and Legislation of the American Medical Association. The provisions of the amended Servicemen's Readjustment Act are included. The statement has been approved for publication by the Central Office of the Veterans Administration.

1. *Eligibility of Hospitals.*—On Nov. 9, 1945 the chairman of the subcommittee on veterans' affairs of the Committee on Postwar Medical Service of the American Medical Association submitted for the consideration of the Administrator of Veterans' Affairs the question as to whether payment of tuition can be made to hospitals which furnish physician veterans advanced hospital education beyond internship. In the letter it was stated that the instruction to be furnished to the physician veterans should be regarded as an educational program, as distinguished from "on the job training," for the reason that it involves organized teaching on rounds and in conferences as well as classroom conferences dealing with autopsy findings, medical problems in the hospital, x-ray diagnosis, laboratory studies and other organized educational features which definitely stamp this training as education. It was also stated that such a program of instruction entails expenditures by the hospitals which would be unnecessary if patient care alone were involved and that the services of additional physician teachers would be required in order to provide the necessary instruction.

In reply to this letter from the chairman of the subcommittee of the Committee on Postwar Medical Service, the Administrator of Veterans' Affairs ruled that ". . . the training contemplated in connection with residencies and fellowships is not 'training on the job' . . . but is in the nature of institutional training." This applies to all acceptable residency hospitals, whether or not they are affiliated with a medical school. The ruling means that otherwise qualified physician veterans pursuing the contemplated training in connection with residencies or fellowships are eligible for subsistence benefits and that approved hospitals are eligible to apply for tuition remuneration. (See section 6).

2. *State Approval of Hospitals.*—Although the Veterans Administrator has established the general principle that hospitals conducting acceptable residencies are eligible for participation under the bill, it is still necessary for each residency hospital to seek approval as an individual institution from the appropriate state agency. The law requires the governor of each state to designate an authority in each state to approve educational institutions. In most states this agency is the Office of Education, by whatever name it may be called. A revised list of these agencies for all the states is given in section 10. No hospital can participate unless it is approved by the state agency; veterans receive no subsistence allowance while serving as residents in a hospital not so approved.

It is the responsibility of these state agencies to see that only institutions offering education of a high quality be certified for participation, as a protection to the veteran.

3. *Eligibility of Veterans.*—Honorably discharged physician veterans of this war are eligible for educational benefits for a period of time equal to one year plus the duration of their active duty since Sept. 16, 1940, and prior to the termination of the war, not including time spent on active duty in the A. S. T. or Navy V-12 programs, and not to exceed a total period of four years. It is no longer necessary for the veteran to demonstrate that his training was interrupted by the war, regardless of his age when entering active duty. The period of training must be commenced within four years of discharge, or the termination of the war, whichever is later, and completed within the nine year limitation. In no case may the period of education exceed four years.

4. *Establishment of Eligibility.*—It is necessary for the veteran to establish his eligibility formally. This he does by filing an application on Veterans Administration Rehabilitation form 1950 at the regional office (see section 11) of the Veterans Administration. A certified copy of his discharge or a photostatic copy of his discharge should accompany the application. From the regional office the veteran receives a Certificate of Eligibility and Entitlement (Veterans Administration form 1953), which indicates the duration of the training to which he is entitled. This certificate must be endorsed by the approved hospital and forwarded to the regional office of the Veterans Administration. Benefits cannot be paid unless and until this process is complete. It is important for the veteran to make certain that the hospital has been approved by the appropriate state agency (see sections 2 and 10). It is also to the veteran's interest to make certain whether the hospital is also approved by appropriate nongovernmental approving agencies, lest the work done proves later to be useless for such special purposes as certification by one of the American Boards in the medical specialties.

5. *Subsistence Allowance.*—The veteran then receives a monthly subsistence check for $65 if without dependents or $90 per month if he has a dependent or dependents. These payments will not be made during terminal leave. Public Law 268, approved Dec. 28, 1945, repeals section 1505 Public Law 346 reading in part as follows: "In the event there shall hereafter be authorized any allowance in the nature of adjusted compensation, any benefits received by, or paid for, any veteran under this act shall be charged against and deducted from such adjusted compensation."

6. *Payments to Hospitals.*—The law and Veterans Administration regulations make special provisions for payments to educational institutions having no established tuition fee. These apply to approved residency hospitals, which rarely if ever have an established tuition fee; in fact, some participating hospitals will provide a modest stipend to the veteran and may even provide facilities for living in the hospital as part of his training, in which case the other provisions of this statement still apply. Regarding payments to hospitals, there are four alternatives available to hospitals:

a. The hospital may request no payments; this does not affect subsistence payments to veterans.

b. The hospital may have a regularly established tuition fee, which it may request from the regional office of the Veterans Administration for its resident veterans; this would usually be limited to some university or medical school hospitals offering fellowship or graduate work including residency training.

c. Hospitals may avail themselves of the regulations in Veterans Administration instruction No. 6, Title II, Public Law 346, amplified in conferences with the Veterans Administration. Any approved educational institution that has no established tuition fee or whose established tuition is considered inadequate compensation may charge for each veteran enrolled in a full time course as much as $15 per month, $45 per quarter or $60 per semester. In residency hospitals the length of the course of instruction is fifty-two weeks (including vacation), which does not fall within the Veterans Administration definition of an ordinary school year, as a period of thirty to thirty-eight weeks. Residency hospitals selecting this basis of compensation would be paid $15 per month, or $180 for a course of fifty-two weeks.

This alternative will probably apply to most hospitals desiring tuition remuneration.

d. A hospital that has no established tuition or that considers its established tuition charges to be inadequate compensation and desires payments in excess of that described in section 6 (c) may, in accordance with the provisions of Veterans Administration instruction No. 6, be paid fair and reasonable compensation not exceeding the estimated cost of teaching personnel and supplies for instruction. Hospitals desiring compensation on this basis will be required to submit through the manager of the regional office to the Assistant Administrator for Vocational Rehabilitation and Education, Veterans Administration, Washington, D. C., information on cost of teaching personnel and supplies for the courses of instruction. Information will also be required as to the value of services rendered by the residents and fellows to the institution. The value of such services must be offset under this basis of compensation against any costs for teaching personnel and supplies incurred in giving the courses in question. Medical school hospitals especially may wish to follow this alternative for fellowships involving residency training, when there is no established tuition fee for such work.

Note that it is only in connection with section 6 (d) that it is necessary for the hospital finally to deal directly with the Central Office of the Veterans Administration in Washington. In all other negotiations described in this statement the hospital as well as the veteran deal with local authorities: the regional office of the Veterans Administration or, initially, with the state agency which approves educational institutions.

7. *Responsibility of Hospitals.*—It is the responsibility of every participating hospital to maintain an educational program of high quality, fulfilling established and generally accepted standards for such work. No hospital is justified in embarking on or continuing residency programs unless these are acceptable not only under the law but professionally as well.

8. *Terminal Leave Period.*—An eligible physician veteran may embark on any educational program within the provisions of the act during his period of terminal leave. During this period of time tuition payments can be made to the approved educational institution to the same extent that they may be made after the medical officer's discharge. However, subsistence payments will not be paid to the veteran during the terminal leave period.

9. *Short Intensive Postgraduate or Training Courses of Less than Thirty Weeks.*—Institutions providing review and refresher courses of less than thirty weeks, having regularly established fees, must be approved by the appropriate state agency (see section 10) and must arrange for tuition payments with the regional offices of the Veterans Administration (see section 11). The veteran must establish his eligibility for this work as described in section 4. The fee can be charged, provided the cost is not in excess of the rate of $500 for a full time course for an ordinary school year. If the customary charges are in excess of the rate of $500 for an ordinary school year the Veterans Administration must find that the agreed cost of such courses is reasonable and fair. However, for review and refresher courses there will be charged against the veteran's time period of eligibility the proportion of an ordinary school year which the cost of the course bears to $500. For example, if an eligible veteran elects a two month course for which $250 is paid, there will be charged against the veteran's period of eligibility for training, not two months, but a half of an ordinary school year, since $250 is half of $500.

By taking such a review or refresher course the veteran does not forfeit the right for further education, within the limits of the period of eligibility for instruction for which he has been certified.

10. *State Approving Agencies.*—The state agencies to which hospitals should apply for approval as educational institutions are:

Alabama, Montgomery. Department of Education, Mr. E. B. Norton.
Arizona, Phoenix. Department of Public Instruction, Mr. E. D. Ring.
Arkansas, Little Rock. Department of Education, Mr. Ralph B. Jones.
California, Sacramento. Department of Education, Mr. Robert R. Hartzell.
Colorado, Denver. Governor's Advisory Committee on Veterans' Education and Training, Mr. Craig P. Minear.
Connecticut, Hartford. Department of Education, Mr. John E. Nichols.
Delaware, Dover. Board of Education, Dr. H. V. Holloway.
District of Columbia, Washington. Board of Education, Mr. Paul Eddy.
Georgia, Atlanta. Department of Veterans' Education, Capt. F. A. Sams.
Idaho, Boise. Department of Education, Mr. G. C. Sullivan.
Illinois, Springfield. Office of Public Instruction, Mr. Vernon L. Nickell.
Indiana, Indianapolis. Department of Public Instruction, Dr. Clement T. Malan.
Iowa, Des Moines. Department of Public Instruction, Miss Jessie M. Parker.
Kansas, Manhattan. Committee on Institutions for Veteran-Training, Dr. F. D. Farrell.
Kentucky, Frankfort. Department of Education, Dr. R. H. Woods.
Louisiana, Baton Rouge. Department of Education, Mr. Charles B. Manning.
Maine, Augusta. Department of Education, Mr. Harry V. Gilson.
Maryland, Baltimore. Department of Education, Mr. Thomas G. Pullen Jr.
Massachusetts, Boston. Department of Education, Mr. Julius E. Warren.
Michigan, Lansing. Department of Education, Dr. Eugene B. Elliott.
Minnesota, St. Paul. Department of Education, Mr. Dean M. Schweickhard.
Mississippi, Jackson. Department of Education.
Missouri, Jefferson City. Department of Education.
Montana, Helena. Department of Public Instruction, Miss Elizabeth Ireland.
Nebraska, Lincoln. Department of Public Instruction, Mr. Wayne O. Reed.
Nevada, Carson City. Department of Education, Miss Mildred Bray.
New Hampshire, Concord. Board of Education.
New Jersey, Trenton. Department of Economic Development, Mr. Yorke E. Rhodes.
New Mexico, Santa Fe. State Planning Board, Mr. V. J. Jaeger.
New York, Albany. State Education Department, Mr. John S. Allen.
North Carolina, Raleigh. Department of Public Instruction, Dr. Clyde A. Erwin.
North Dakota, Bismarck. Board of Higher Education, Mr. A. F. Arnason.
Ohio, Columbus. Department of Education.
Oklahoma, Oklahoma City. State Certifying Agency, Mr. Milt Phillips.
Oregon, Salem. Department of Education, Mr. Rex Putnam.
Pennsylvania, Harrisburg. Department of Public Instruction, Mr. Paul E. Witmeyer.
Rhode Island, Providence. Department of Education, Dr. James F. Rockett.
South Carolina, Columbia. Department of Education, Mr. W. A. Schiffley.
South Dakota, Pierre. Department of Public Instruction, Mr. J. F. Hines.
Tennessee, Nashville. Department of Education, Mr. Burgin E. Dossett.
Texas, Austin. State Committee for Veterans' Training, Mr. A. O. Willman.
Utah, Salt Lake City. Department of Public Instruction, Mr E. Allen Bateman.
Vermont, Montpelier. Department of Education, Mr. Ralph E. Noble.
Virginia, Richmond. Board of Education, Dr. J. L. Blair Buck.
Washington, Olympia. Department of Public Instruction, Miss Pearl A. Wanamaker.
West Virginia, Charleston. Department of Education, Mr. W. W. Trent.
Wisconsin, Madison. Veterans' Recognition Board, Mr. Walter B. Senty.
Wyoming, Cheyenne. Department of Education, Esther L. Anderson.
Alaska, Juneau. Department of Education, Dr. James C. Ryan.
Hawaii, Honolulu. Department of Public Instruction, Mr. Orrin W. Robinson.
Panama Canal Zone. Office of the Panama Canal, Mr. B. F. Burdick, Washington, D. C.
Puerto Rico, San Juan. Department of Education, Mr. Jose H. Gallardo.
Virgin Islands, Charlotte Amalie, St. Thomas. Acting Governor of Virgin Islands, Hon. Morris F. DeCastro.

11. *Regional Veterans' Offices.*—The regional offices of the Veterans Administration and veterans' centers having regional office activities are listed here with the name of the manager of the regional office. It is highly important that each participating hospital become well acquainted with its own regional office, its manager and its policies and procedures. It is to this office that the hospital transmits the endorsed Certificate of Eligibility and Entitlement of the resident veteran and presents its claim for remuneration. It is from this office that the hospital and the veteran receive payments.

Alabama, Montgomery. Mr. Middleton E. Head.
Arizona, Tucson. Col. William T. Haraway.
Arkansas, Little Rock. Mr. James A. Winn.
California, Los Angeles, Col. R. A. Bringham; San Francisco, Col. James G. Donnelly.
Colorado, Denver. Mr. A. D. Borden.
Connecticut, Hartford. Mr. Myer Schwolsky.

District of Columbia, Washington. Mr. Howard F. Dickensheets.
Florida, Bay Pines. Mr. M. Bryson.
Georgia, Atlanta. Mr. J. M. Slaton Jr.
Idaho, Boise. Mr. C. H. Hudelson.
Illinois, Hines. Mr. Charles G. Beck.
Indiana, Indianapolis. Mr. B. C. Moore.
Iowa, Des Moines. Mr. William B. Nugent.
Kansas, Wichita. Mr. Leonard N. Sowards.
Kentucky, Lexington. Mr. Harry W. Farmer.
Louisiana, New Orleans. Mr. Frank Martinez Jr.
Maine, Togus. Mr. M. L. Stoddard.
Maryland, Baltimore. Mr. William L. Limburg.
Massachusetts, Boston. Gen. William J. Blake.
Michigan, Dearborn. Mr. Guy F. Palmer.
Minnesota, Minneapolis. Mr. C. D. Hibbard.
Mississippi, Jackson. Mr. W. S. Shipman.
Missouri, Kansas City, Mr. John A. Brody; St. Louis, Mr. Edward J. Wieland.
Montana, Fort Harrison. Dr. Herbert C. Watts.
Nebraska, Lincoln. Mr. E. R. Benke.
Nevada, Reno. Mr. Edward F. Reed.
New Hampshire, Manchester. Mr. James J. Doyle.
New Jersey, Lyons. Lieut. Col. Harold E. Foster.
New Mexico, Albuquerque. Mr. David K. Dalager.
New York, Batavia, Mr. C. F. Sargent; New York, Mr. E. B. Dunkelberger.
North Carolina, Fayetteville. Mr. James S. Pittman.
North Dakota, Fargo. Mr. C. T. Hoverson.
Ohio, Brecksville, Gen. William L. Marlin; Dayton, Mr. John H. Ale.
Oklahoma, Muskogee. Mr. Polk T. Lunquest.
Oregon, Portland. Col. Paul I. Carter.
Pennsylvania, Philadelphia, Mr. H. J. Crosson; Pittsburgh, Mr. Kenneth S. Covey; Wilkes-Barre, Mr. Michael B. Reap.
Rhode Island, Providence. Col. Davis G. Arnold.
South Carolina, Columbia. Mr. S. C. Groeschel.
South Dakota, Sioux Falls. Mr. Charles B. Kaercher.
Tennessee, Murfreesboro. Mr. Sam Jared Jr.
Texas, Waco. Col. Harry Rubin.
Utah, Salt Lake City. Mr. E. A. Littlefield.
Vermont, White River Junction. Mr. Charles L. Jacobs.
Virginia, Roanoke. Col. Edwin W. Jordan.
Washington, Seattle. Mr. O. G. Fairburn.
West Virginia, Huntington. Mr. H. G. Hooks.
Wisconsin, Wood. Mr. Paul G. Froemming.
Wyoming, Cheyenne. Mr. James L. Laughlin.

SUBCOMMITTEE ON VETERANS' AFFAIRS OF THE COMMITTEE ON POSTWAR MEDICAL SERVICE.
FREDERICK A. COLLER.
J. W. HOLLOWAY JR.
VICTOR JOHNSON.
ALPHONSE M. SCHWITALLA, Chairman.

NAVY

NAVY AWARDS AND COMMENDATIONS

Captain John H. Robbins

The Bronze Star was recently awarded to Capt. John H. Robbins, formerly of Washington, D. C., "for meritorious service in connection with operations against the enemy as force medical officer on the staff of the commander, South Pacific Area and Force, from Feb. 12 to Sept. 26, 1945. During this period Captain Robbins displayed outstanding professional ability in handling the many medical problems which arose in the area. By his initiative and thorough knowledge of medical administration, he maintained an efficient hospital service for the sick and wounded in the South Pacific and from adjacent areas. Through his able supervision of the application of malaria and epidemic control principles, he prevented much loss of manpower from tropical diseases. His leadership and medical skill were in keeping with the highest traditions of the United States Naval Service." Dr. Robbins graduated from Albany Medical College in 1917 and entered the service Feb. 28, 1918.

Commander Hjalmar August Erickson

The Bronze Star was recently awarded to Comdr. Hjalmar August Erickson, Monterey Park, Calif., "for heroic service while attached to the staff of the medical dispensary at Cavite Navy Yard in the the Philippines, during and subsequent to the bombing attack by enemy Japanese forces on Dec. 10, 1941. Although severely wounded when the dispensary received a direct hit, Commander Erickson calmly reorganized the battle dressing station at Porta Vaga Cathedral and, undeterred by the falling of enemy bombs and the resulting fires and explosions, carried on his valiant efforts, administering to over 300 casualties during the afternoon and night without stopping. Through his professional skill and capable leadership many lives were saved, and his indomitable fortitude and unwavering devotion to duty were in keeping with the highest traditions of the United States Naval Service." Dr. Erickson graduated from the College of Medical Evangelists, Los Angeles, in 1923 and entered the service March 14, 1941.

Commander Earle Ellsworth Metcalfe

Comdr. Earle E. Metcalfe, formerly of Washington, D. C., was recently awarded the Bronze Star "for distinguishing himself by meritorious achievement in connection with operations against the enemy during the period May 15, 1945 to Aug. 15, 1945, while serving as senior medical officer of an aircraft carrier. During this period his ship participated in the attack on the islands of Nansei Shoto in support of invasion force, Okinawa, May-June 1945; attack on Tokyo area airfields and on shipping, July 1945; attack on southern Hokkaido airfields, installations and shipping, July 1945; attack on Kure Naval Base and adjoining airfields, July 1945; attack on northern Honshu airfields, August 1945, and attack on Tokyo area airfield, August 1945. He constantly maintained a highly efficient medical department which won the complete confidence of the entire ship's company by its outstanding record of safe recovery for the sick and wounded. His professional skill and able direction of his department in combat operations against the enemy were responsible in a large measure for the maintenance and exceptionally high state of health and morale of the crew and were in keeping with the highest traditions of the United States Naval Service." Dr. Metcalfe graduated from Loyola University School of Medicine, Chicago, in 1936 and entered the service Nov. 11, 1937.

Lieutenant (jg) Charles Arthur Dwyer Jr.

The Bronze Star was recently awarded to Lieut. (jg) Charles Arthur Dwyer Jr., formerly of Houston, Texas, "for meritorious achievement as attending surgeon in the Isolation Department and later as a ward surgeon at the Billibid Hospital for Military Prison Camps, Manila, Philippine Islands, from Oct. 30, 1944 until the recapture of that prison by American forces on Feb. 4, 1945." The citation stated that, "although himself a patient in the hospital, Lieutenant Dwyer voluntarily returned to a duty status and, overcoming severe handicaps to efficient treatment, including miserable living conditions, diet deficiencies and inadequate supplies and equipment, afforded those in the compound full benefit of his surgical skill and excellent critical analysis of each case, laboring long hours to examine as many as 300 patients in the morning and an equal number at evening sick call. Acting also as the activity's admitting officer at a time when all personnel suffered from malnutrition, he carefully considered all applicants for admission and chose the most serious cases to occupy the limited bed space available, basing his individual judgment on the best interests of all. Through his consistently cheerful demeanor, unwavering concern for the welfare of others and extraordinary professional ability, Lieutenant Dwyer contributed immeasurably to the maintenance of morale at Billibid and to the successful functioning of the vital Medical Detachment." Dr. Dwyer graduated from Louisiana State University School of Medicine, New Orleans, in 1939 and entered the service in March 1942.

Lieutenant Commander James S. Vedder

The Silver Star was recently awarded to Lieut. Comdr. James S. Vedder, formerly of Marshfield, Wis., for "gallantry in action" while serving as battalion surgeon of the 27th Marine Regiment during the Iwo Jima campaign. Dr. Vedder graduated from Northwestern University Medical School, Chicago, in 1938 and entered the service Sept. 24, 1942.

ARMY

OBSERVE FOURTH ANNIVERSARY OF O'REILLY GENERAL HOSPITAL

During the past four years more than 16,000 surgical operations have been performed at the O'Reilly General Hospital, Springfield, Mo. The Medical Department Enlisted Technicians School at O'Reilly General Hospital has graduated more than 14,000 technically trained medical corpsmen and, in addition, courses have been conducted for orthopedic mechanics, anesthetists, physical therapy aides, hospital dietitians and x-ray, laboratory and occupational therapy technicians.

At the ceremony celebrating the fourth anniversary of the hospital Commanding General George B. Foster paid high tribute to the officers, nurses, enlisted men and women and the civilians who have served at O'Reilly and publicly acknowledged his gratitude for the loyalty, fidelity, cooperativeness and selfless devotion to duty which they displayed at all times.

NEW DIRECTOR OF OCCUPATIONAL THERAPY DIVISION

Miss H. Elizabeth Messick, former director of occupational therapy for the District of Columbia Health Department, was recently appointed director of the Occupational Therapy Branch, Reconditioning Consultants Division, Office of the Surgeon General, succeeding Mrs. Winifred G. Kahmann, who is returning to her former position as director of occupational therapy at the Indiana University medical center, where she served eighteen years before coming to Washington. Miss Messick served as a member of the Walter Reed staff from 1933 to 1939. In 1939 she organized and developed a department of occupational therapy under the Bureau of Maternal and Child Welfare of the District of Columbia Health Department. She came to the Office of the Surgeon General in 1944, where she was appointed assistant chief of the Occupational Therapy Branch, Reconditioning Consultants Division.

VISIT PACIFIC ARMY HOSPITALS

Brig. Gen. Hugh J. Morgan, director of Medical Consultants Division, and Col. Francis R. Dieuaide, chief of Tropical Disease Treatment Branch, are making an inspection of medical services in the Pacific, Japan and Japanese territory and surveying problems concerned with internal medicine. During a two week stopover in Manila a special study was made of the comparison between patients from Asia suffering starvation and Europe's starvation cases.

Health studies were recently made in Europe by Brig. Gen. James S. Simmons, chief of Preventive Medicine Service, and Col. Thomas B. Turner, director of Civil Public Health and Nutrition.

RECEIVES ITALIAN AWARD

Major Dallas G. Baynton, A. N. C., Chicago, was recently awarded the Cross for War Merit by the Italian government. Major Baynton has been a member of the Army Nurse Corps since 1942.

ARMY AWARDS AND COMMENDATIONS

Lieutenant Colonel William B. McCutcheon

Lieut. Col. William B. McCutcheon, formerly of Durham, N. C., was recently cited for "meritorious service from Aug. 11, 1944 to May 4, 1945. As chief of surgical service of the 101st (U. S.) General Hospital, Lieutenant Colonel McCutcheon's knowledge and skill of surgery contributed in a marked degree to the successful and high professional standards attained in adequately providing for the sick and wounded. Displaying unusual qualities of leadership and untiring devotion to duty, he achieved remarkable results under capacity conditions. The meritorious services rendered by Lieutenant Colonel McCutcheon are in keeping with the high standards of the military service." Dr. McCutcheon graduated from the Medical College of Virginia, Richmond, in 1921 and entered the service May 11, 1942.

Lieutenant Colonel Oscar P. Hampton Jr.

The Legion of Merit was recently awarded to Lieut. Col. Oscar P. Hampton Jr., formerly of University City, Mo., for performance of outstanding services in North Africa and Italy as consultant in orthopedic surgery. The citation reads, in part, "Colonel Hampton early in the Tunisian campaign observed that the prevalent and widely accepted method for the management of battle fractures should be abandoned and more radical but correspondingly more successful procedures substituted therefor. Energetically pursuing this line of development, with the adjuvant use of penicillin during the Italian campaign the surgical management of the compound fracture of warfare was revolutionized. An exponent of complete initial surgery followed by precise reparative surgery, Lieutenant Colonel Hampton extended his teachings on a theaterwide basis, and by precept and demonstration he furthered a program that materially reduced the incidence of the crippling or even fatal infection that so readily converted this common battlefield wound into a major catastrophe." Dr. Hampton graduated from the University of Tennessee College of Medicine, Memphis, in 1928 and entered the service Jan. 10, 1942.

Major Richard V. Ebert

The Bronze Star was recently awarded to Major Richard V. Ebert, formerly of Brookline, Mass., "for meritorious service in connection with military operations as a member of the Medical Service of the 5th General Hospital from May 12, 1942 to May 15, 1944. Major Ebert demonstrated great ingenuity in collaborating with another officer in developing a simple, practical and easily operated transfusion apparatus for field use. This device has proved to be an invaluable contribution to the Medical Department's field equipment and makes whole blood transfusions easily and readily available to the wounded in forward echelons. Major Ebert's device has been of great value to the success of military operations and has saved the lives of countless soldiers." Dr. Ebert graduated from the University of Chicago School of Medicine in 1937 and entered the service Jan. 1, 1942.

Captain Stanley K. Gutelius

The Bronze Star was recently awarded to Capt. Stanley K. Gutelius, formerly of Rochester, N. Y. He was further cited for his initiative, zeal and professional skill necessary to the successful accomplishment of his battalion's missions. "His untiring efforts in caring for the sick and wounded are reflected in the high standard of health and morale maintained in his unit despite weather and obstacles incident to combat." Dr. Gutelius graduated from the University of Michigan Medical School, Ann Arbor, in 1941 and entered the service Sept. 5, 1942.

Captain Carl Milchen

Capt. Carl Milchen, formerly of Blair, Wis., was recently awarded the Bronze Star "for meritorious achievement in connection with military operations against the enemy at Leyte Province and Luzon Island, Philippine Islands, from Oct. 20, 1944 to May 21, 1945." Dr. Milchen graduated from Marquette University School of Medicine, Milwaukee, in 1937 and entered the service Aug. 17, 1942.

Major Meyer Maskin

Major Meyer Maskin, New York, was recently awarded the Bronze Star and Bronze Arrowhead. He served as psychiatrist with the 4th Infantry Division in the European Theater of Operations. Dr. Maskin graduated from Wayne University College of Medicine, Detroit, in 1935 and entered the service May 15, 1942.

Lieutenant Colonel Maurice A. Hardgrove

Lieut. Col. Maurice A. Hardgrove, formerly of Milwaukee, was recently awarded the Legion of Merit for "exceptionally meritorious conduct in the performance of outstanding service." Dr. Hardgrove graduated from Columbia University College of Physicians and Surgeons, New York, in 1928 and entered the service July 2, 1942.

ORGANIZATION SECTION

Postwar Medical Service

MEETING OF DECEMBER 1, 1945

The Committee on Postwar Medical Service was called to order by the Chairman, Dr. Ernest E. Irons, at 10:04 a. m., Saturday, Dec. 1, 1945, in the Board of Trustees Room at American Medical Association Headquarters in Chicago. The following members and liaison members of the committee and guests were present:

Dr. Irvin Abell.
Dr. Arthur W. Allen.
Dr. Louis H. Bauer.
Dr. Walter L. Bierring.
Dr. James R. Bloss.
Dr. Willard Camalier.
Dr. Frederick A. Coller.
Mr. Graham L. Davis.
Capt. William E. Eaton.
Lieut. Col. Bryan C. T. Fenton.
Dr. Ralph Fenton.
Dr. Morris Fishbein.
Dr. Evarts A. Graham.
Lieut. Comdr. G. G. Gross.
Capt. L. M. Harris.
Dr. E. L. Henderson.
Mr. T. A. Hendricks.
Mr. J. W. Holloway Jr.
Dr. Ernest E. Irons.
Dr. Victor Johnson.
Col. B. R. Kirklin.
Dr. Herman L. Kretschmer.
Major Gen. George F. Lull.
Dr. James M. Mason.
Col. Hugo Mella.
Dr. J. J. Moore.
Dr. Howard C. Naffziger.
Dr. James E. Paullin.
Dr. Robert A. Peers.
Lieut. Col. William N. Piper.
Dr. C. W. Roberts.
Alphonse M. Schwitalla, S.J.
Dr. R. L. Sensenich.
Lieut. Col. Rolland B. Sigafoos.
Dr. H. H. Shoulders.
Dr. LeRoy H. Sloan.
Dr. Austin E. Smith.
Miss Mary Switzer.
Dr. Olin West.

SURPLUS MEDICAL AND HOSPITAL SUPPLIES

Father Schwitalla, chairman of the Subcommittee on Surplus Medical and Hospital Supplies, presented a progress report, which, after discussion, was adopted and publication authorized. (The report was published in THE JOURNAL Dec. 8, 1945, p. 1033.)

Dr. Camalier stated that the American Dental Association feels that the veteran is not getting what he is entitled to under the law. His association feels that the dental veteran will produce more in the cause of public health and more directly and more quickly than the state and municipal agencies, which, under the law, will have first priority. Under the program being considered the hospitals and dental offices to be established in thousands of communities will take a long time and the surplus dental equipment now available will not be worth anything by the time they are made available. Father Schwitalla stated that he thought the veteran was being given as much preference as could be given him under the existing law.

Dr. Camalier moved that the Committee on Postwar Medical Service go on record as favoring a number 1 priority for medical and dental veterans for obtaining surplus material, whether it requires a liberal interpretation of the regulations or a change in the law. The motion was seconded and an amendment offered providing that regulation No. 14 should be left intact. Action on the motion was postponed until later in the meeting.

EDUCATIONAL INTERNSHIP AND RESIDENCY OPPORTUNITIES FOR MEDICAL OFFICERS

Dr. Johnson presented the following progress report:

Large numbers of medical officers are seeking residencies especially in surgery. Many of them communicate with the Council on Medical Education and Hospitals and many more with hospitals directly. The following suggestions have been helpful to returning medical officers: First they are urged to seek appointments in hospitals in which they may formerly have carried out some house officer work. Secondly they are urged not to insist that the residency be in a medical school hospital but should be sought in some other approved residency hospital, at least for a time.

The Council on Medical Education and Hospitals has inaugurated a card reporting system by means of which hospitals report vacancies at regular intervals in all fields for which they are approved. This reporting system has been extremely valuable in advising returning medical officers of hospital vacancies.

The Council is attempting to work out with the specialty boards a streamlined system of approving new residencies on a provisional or probationary basis. This should make available more rapidly new residency openings, which are being developed in considerable numbers.

The Selective Service System has made a ruling which will make it possible for medical schools to return to autumn admissions of freshmen classes if they so desire even though the current academic year in the school may end in April. This rule was designed to permit certain medical schools which wish to do so to free all their clinical facilities for the instruction of veterans for a period of three to six months next spring or summer. As far as the Selective Service System and the Navy are concerned, schools may now plan this if they wish. The Army has taken the stand that such deceleration may not take place so long as there are army students in the medical schools. Efforts are being made at acquainting the Army with the importance of making an adjustment similar to that of the Navy and the Selective Service System.

The Procurement and Assignment Service will discontinue the deferment of reserve officers of the Army Specialized Training and Navy V-12 programs beyond a twelve month internship effective April 1, 1946. This should make many more residencies available to returning medical officers.

The demand for reprints of "Continuation Courses for Veteran and Civilian Physicians" has been very great. Nearly a thousand copies are distributed each month in response to requests for this information. The list of continuation courses being offered from Jan. 1 to July 16, 1946 will be published in THE JOURNAL Dec. 8, 1945. This list is about 30 per cent longer than for the preceding period. There are more courses of longer duration and more courses being offered by universities and medical schools, and there is a broader geographic distribution.

At the request of Dr. Graham, Dr. Johnson read an excerpt from a directive issued by the Procurement and Assignment Service under date of Nov. 6, 1945, as follows:

In the interest of adequate distribution of the available supply of veterans, it is expected that hospitals will not fill their house staffs out of proportion to present quotas.

Dr. Graham moved that the Committee on Postwar Medical Service protest most violently against the intolerable situation which that portion of the directive imposes. After extended discussion, during which Miss Switzer stated that it was unfortunate that that particular portion of the directive should have been so worded but that she did not think it needed be taken too seriously, no action was taken on the motion, and Dr. Johnson's report was adopted. Dr. Graham then moved that the committee go on record as favoring taking returning medical officers for residencies in teaching hospitals approved for residencies by the American Medical Association in as great numbers as possible. Dr. Johnson added to the motion, with Dr. Graham's consent, "and without any kind of quota limitation." The motion was adopted unanimously after extended discussion.

There was lengthy discussion on the subject of the deceleration of the medical school curriculums, mentioned in Dr. Johnson's report, and Father Schwitalla moved that Dr. Johnson be asked to present to the executive committee of the Association of American Medical Colleges for its discussion and action a request that the War Department be asked to discontinue its Army Specialized Training Program at the end of each school's current session. The Chairman suggested amendment of the motion by adding "and, in the event of the College Association taking favorable action on the request, that that association take up the matter directly with the War Department." The motion, seconded by Dr. Bierring, was adopted.

BUREAU OF INFORMATION

Dr. West presented a report on the activities of the Bureau of Information, which follows in condensed form:

Since V-J day the Bureau of Information has received each week about 565 letters from medical officers, and a weekly average of 110 physicians have come to the office for specific information regarding medical education, licensure and relocation.

One of the important objectives of the Bureau of Information has been to assist the returning doctor to make a wise selection of a community in which to reestablish his practice. Medical officers contacting the Bureau for information regarding opportunities in certain states are furnished with complete listings of the areas in the states where there is need for a physician. For further information regarding the establishment of a practice in certain areas they are referred to the secretaries of the county and state medical societies.

There appears to be among the returning veterans a trend to get away from the rush and tension of practice in large urban centers. It is felt that through the cooperation of the smaller communities in attracting physicians to their areas by offering them better hospital facilities and through an organized grouping of the physicians' services in health centers there will be little difficulty in getting the physician

seeking a place to reestablish his practice to go into areas where he is most needed.

Another objective of the Bureau of Information has been to have at the central office up to date statistics of the medical facilities for each area in the country. At present there is a permanent card file for the 3,072 counties in the United States giving important data concerning the unit, the county. There are still 551 counties that have not returned the completed summary sheets for their areas. Considering the many changes that have been taking place since V-J day and the importance of having accurate statistics at the central office of the Bureau, a memorandum will soon be sent through the state medical offices to the secretaries of the county medical societies giving the distribution of physicians for their counties as recorded at the Bureau and requesting the secretaries to make any changes necessary so that the Bureau may have a picture of the medical personnel in their areas and of the present and future needs for the adequate medical care of their community. It is the plan of the Bureau, when the physicians who were in practice before entering the armed services have returned to their civilian practices again, to publish in THE JOURNAL periodically a map of the United States showing the physician-population ratio for each county. From time to time the Bureau will continue to publish in THE JOURNAL certain data regarding the medical and economic aspects of certain areas.

With the cooperation of all who are so vitally interested in furthering the better distribution of physicians through the timely efforts of the Bureau of Information, it is felt that the first basic point of President Truman's recent recommendation to Congress that there be a better distribution of physicians throughout the country and that physicians seeking locations to practice be encouraged to locate in areas where they are most needed can be worked out successfully.

The Council on Medical Education and Hospitals receives approximately 1,200 letters a month from physician veterans and medical officers on active duty. Most of the officers seek information on residencies in specialties, short term refresher courses, basic science instruction and other matters relating to the education of physician veterans under the G. I. Bill of Rights. Numerous requests are also received with reference to specialty certification, requirements of the individual boards, educational credit for military service, opportunities for training in army, navy and veterans' hospitals, preceptorships and assistantships, affiliated hospital assignments, quota allocations and deferment of residents and assistant residents under the 9-9-9 program of medical education. Several seek information on hospital administration, medical licensure requirements, opportunities for staff appointments, organization of clinics, office plans, surplus equipment and supplies, financial aids in training and practice, suitable appointments for handicapped veterans and various other questions.

All inquiries receive careful attention, and every effort is made to supply complete information to all medical officers. In relation to educational opportunities, the Council provides lists of postgraduate continuation courses for veteran and civilian physicians, hospitals approved for internships, residencies and fellowships, and lists of vacancies reported in relation to individual specialties. Since Oct. 18, 1945 the Council has conducted two surveys to ascertain the number of vacancies available in approved hospitals for returning medical officers. The Council is also continuing its efforts to establish additional high grade residency programs in hospitals that have not yet developed their educational service to full capacity. Through these activities many new services are now in process of organization and may soon be added to the approved lists.

Approximately 200 medical officers visit the Council's office each month, seeking in general the same type of information as requested in the letters already mentioned. Among these men there is great interest in certification and specialty practice, although the older group, 35 to 40 or over, hesitate as a rule to undertake a long term residency program of three years to qualify for board certification. Many of these, however, are hoping to obtain assistantships or preceptorships that combine both practice and education and at the same time afford greater financial aid. Some officers are undecided as to future training and practice and appreciate very much the assistance that our office is able to give through personal counseling. A considerable number of the officers are critical of their army service and some are disappointed that educational appointments are not immediately available for residency or postgraduate training. It is observed, however, that the great majority are applying at university hospitals or medical centers, where requests for training are already in excess of available facilities.

The personal interviews have been exceedingly helpful in relation to these problems. The medical officers appreciate the opportunity to express their views, and it is also possible in these contacts to explain more fully the work of the American Medical Association in connection with graduate and postgraduate medical education. The value of these contacts is clearly evident, and every effort will be made to continue our assistance and personal service to the returning medical officer.

The Bureau of Legal Medicine and Legislation has actively cooperated with the Bureau of Information in the accomplishment of the duties devolved on it. The Bureau assisted in the preparation of the Information Bulletin for Medical Officers, has answered by correspondence a considerable number of inquiries relating to problems of medical licensure and to the benefits available to medical officers under the G. I. Bill of Rights, and has accorded interviews to medical officers who have visited headquarters in person seeking information on licensure, on the G. I. Bill of Rights and on partnership agreements. Additionally, many telephone inquiries have been answered. About a week ago the Director furnished Mrs. Shuler with statistics indicating the number of inquiries answered for the Bureau of Information, a minimum of 294.

The inquiries answered during the last several months have been fairly evenly divided between licensure problems and benefits under the G. I. Bill of Rights. As to licensure problems, medical officers are concerned mainly with the problem of obtaining reciprocity licenses. Many feel that service in the military forces should constitute a qualifying factor for the obtaining of licenses by reciprocity. Relatively few inquiries have been received from medical officers who entered service without obtaining a license in any state. A much larger number have come in from graduates of unapproved schools, and these inquiries indicate a feeling that military service should qualify such graduates for licenses in states that otherwise would not consider their applications because of their school of graduation.

As to the benefits accorded by the G. I. Bill of Rights, medical officers are concerned with the maintenance allowance provided by the federal law, with whether benefits will be available during the terminal leave period, with whether benefits will be available while serving residencies and the relationship to such benefits of stipends paid by a hospital, with the procedure to be followed in taking advantage of the loan provisions of the federal law and with the procedure that a medical officer must follow in making application for benefits generally.

It was moved by Dr. Paullin that the Committee on Postwar Medical Service request the Board of Trustees of the American Medical Association to authorize the continuance of the Bureau of Information beyond the time originally contemplated, and the motion was adopted.

GRADUATE MEDICAL EDUCATION IN NAVAL HOSPITALS

Captain Eaton was requested to give the Committee a résumé of the Navy's program with respect to internships, residencies and graduate medical education, and he presented Captain Harris, who submitted the following memorandums. Captain Harris stated that the memorandum on postgraduate medical education had been prepared by Commodore Alphonse McMahon (MC), U.S.N.R.

Graduate Medical Education in Naval Hospitals.—The overall program for graduate medical education in the Navy should include an advisory committee or board consisting of reserve officers who are outstanding in their own special fields. This board or committee should be under the direct control of the Surgeon General and be responsible to him. In the formative period they can be given charge of developing their own specialties in the different centers. They can select instructors and outline the policy of the teaching of their particular specialties in all the centers. They can confer with their specialty boards in regard to the certification of medical officers and, if necessary, arrange for special certification of navy personnel. This has already been suggested by the orthopedists themselves and has been taken under advisement. This advisory board should meet with the Surgeon General at least once a month for the first year in order that this program can be followed closely and necessary changes made to fit the needs of the various centers. It is conceivable that lack of clinical material may handicap the teaching of a certain specialty in certain hospitals. Either more clinical material should be sent to this center or the teaching of the specialty should be discontinued or transferred to another hospital.

Graduate education in naval hospitals must of necessity be divided into three main divisions: The first division has to do with the eight hospitals which have been selected as centers for the teaching of specialties. It is proposed that these centers be set up at Chelsea, St. Albans, Philadelphia, Bethesda, Great Lakes, Long Beach, Oakland and Seattle. These hospitals have already been approved by the American College of Surgeons and some of them by the Council on Medical Education and Hospitals. It is proposed to set up teaching services in these hospitals, planned and executed along the lines of the teaching services in civilian hospitals. These services will be set up with interns, assistant residents and residents who will run the service under the direction of the attending instructor, who, in turn, will govern the policy of the service and supervise the activities. These centers have been selected with regard to geographic distribution and proximity to teaching institutions and medical centers. Reserve medical officers who have been on active duty will be requested to serve as consultants as far as possible. The orthopedic committee on education is setting up teaching centers in the various areas in civilian hospitals and has offered to include naval hospitals in its consideration. By accepting this offer we shall be saved the necessity of setting up our own teaching service. Another advantage to this type of teaching service is that it offers a medical officer in the Navy the same training he would have received in civilian hospitals. It is hoped that other specialties will follow the example of the orthopedic committee.

The second division of graduate medical education in the Navy has to do with the hospitals not included in the aforementioned centers, where, unless teaching services are established, the medical officers will feel that they are being neglected. In considering plans for instruction in medicine, surgery and the specialties in these hospitals, it is suggested that every effort be made to place qualified men as chiefs of service. It may be necessary to send the qualified surgeons and internists to these hospitals in preference to the centers because of their ability to set up teaching services. Thus it would be possible to give courses in these hospitals in internal medicine, general surgery, eye, ear, nose and throat and neuropsychiatry which would fit in with the plan in the first division for training in the special services. Thus a man could take either his internship or first year of residency in these hospitals and be transferred to the centers for his special training in orthopedics, plastic surgery or other subject. By combining Division I and Division II, a comprehensive graduate course can be set up in which no discrimination will be made against the men ordered to hospitals other than the teaching centers.

Division III of the educational program involves teaching in civilian hospitals, universities and foundations. In order to complement the first two divisions in the program, a survey should be made of teaching fellowships available to officers of the regular Navy. The criticism has been made with regard to prewar training in civilian institutions that six months or even a year is too short a time in which to become proficient in any specialty. It may be necessary to extend the time in civilian hospitals or to make training in civilian hospitals a part of the overall program for training in the specialties. Thus a medical officer could take his internship and one or two years' residency in naval hospitals and after he returns from sea duty be assigned to a civilian institution for graduate instruction in orthopedic or plastic surgery. In this way the three divisions will be integrated and there will be no loss of time, expense or motion in carrying out the program.

In addition to these three divisions the course at the Naval Medical Center in Bethesda should be used for indoctrination and special courses in laboratory and tropical medicine.

Postgraduate Medical Education in the Navy.—The Navy Department established the V-12 Program in March 1943, effecting the enlistment and assignment of personnel to active duty in a training capacity on July 1, 1943. This program was established in order to assure a continuous flow of medical students, deferring them from Selective Service and assuring a continuous flow of medical officers of the Naval Reserve for assignment to active duty for naval intern training or on the completion of civilian training. There were approximately 5,000 Ensigns H(P), U.S.N.R., serving on inactive duty as medical students who were automatically enlisted in class V-12 on the submission of resignations from their inactive Reserve status. This was a voluntary procedure, and approximately 99 per cent of all Ensigns H(P), U.S.N.R. (Medical), were enlisted in the V-12 Medical Program.

At the present time there are approximately 6,800 V-12 medical students enrolled in the Navy College Training Program. The Navy Department on Sept. 1, 1945 informed all medical schools that it was the intention to place all V-12 medical students on inactive duty on the completion of the present semester. By March 15, 1946 all V-12 medical students will have been placed on inactive duty. These students will then be required to pay all expenses, tuition, and so on, as the government is no longer responsible for any financial obligations incurred by these students. The records indicate that 3,616 medical students have graduated from the program and at present hold appointments as Lieutenants (jg) (MC), U.S.N.R.

It is the intention of the Navy Department to continue to defer from call to active duty V-12 medical students until such time as they have graduated, been appointed as Lieutenants (jg) (MC), U.S.N.R., and have completed civilian intern training. V-12 graduates who qualify for naval internships will be ordered to active duty as Lieutenants (jg) (MC), U.S.N.R., on graduation. Medical Reserve officers will be ordered to active duty on the completion of intern training up to and including six months after the termination of the present national emergency. Assignments to active duty after that date must be on a voluntary basis for Reserve officers.

The 9-9-9 Program was accomplished by the Procurement and Assignment Service for Physicians, Dentists and Veterinarians in cooperation with the Surgeons General of the Army and Navy. In brief, the function of the 9-9-9 Program was predicated on the assumption that an insufficient number of civilian interns would be available unless the Army and Navy agreed to defer from call to active duty a certain percentage of all medical officers graduating in the military training programs. The Surgeons General of the Army and Navy agreed to recommend the deferment of one third of all Reserve medical officers completing nine months of intern training to serve as junior residents in civilian hospitals. Under this program one half of the one third interns referred to were recommended for an additional deferment of nine months in order to serve as senior residents in civilian hospitals. At the present time there are 766 Naval Reserve medical officers serving junior residencies and 135 serving senior residencies in civilian hospitals.

It is anticipated by the Bureau of Medicine and Surgery that the 9-9-9 Program will be revised in the near future. It is believed that under this revision Reserve medical officers will become available for active duty after they have completed twelve months of intern training. In this regard it may be necessary to extend the deferment of Reserve medical officers for the period April 1, 1946 until July 1, 1946 as an overlapping period, the legal internship of twelve months to begin on July 1, 1946. If this is accomplished, V-12 medical students graduating on or about April 1, 1946 would be deferred from call to active duty until July 1, 1947. It is the understanding that all civilian hospitals will revert to the twelve month intern schedule commencing July 1, 1946. It is the intention of the Navy that the present intern schedule of nine months be modified to the prewar schedule of twelve months of intern training. It is anticipated that this will be effected April 1, 1946.

Postgraduate medical education in the Navy is recognized as being an essential feature of postwar plans. To maintain the high standards in the practice of medicine this training is of paramount importance to men who have received their medical education under the accelerative instructional plan of medical schools and hospitals. Furthermore, specialization has been recognized in the Navy, and opportunities to become proficient in the various medical specialties will be provided for the men in the Medical Corps. Realizing that not every naval hospital can be set up as a center for postgraduate medical education, eight naval hospitals will be maintained as centers for postgraduate medical training, and services will be organized in these hospitals similar to the arrangements for resident training in universities and civilian hospitals. In addition to the regular staff of medical officers in these eight educational centers, certain outstanding authorities in the various specialties among the Naval Reserve officers will be invited to serve on the staff as consultants and attending physicians. These men will not only serve as consultants for problem cases but also organize the teaching of their individual specialties with ward round seminars and departmental meetings to further the teaching program. A definite head of the training program is to be set up in the Bureau of Medicine and Surgery, and, in addition, an advisory committee consisting of the Reserve consultants will supervise and help organize the teaching in these centers. These Reserve consultants will be selected by and act as consultants to the Surgeon General while serving in this capacity. With this type of organization it is possible to maintain these centers so that the courses are coordinated, allowing the transfer of men from one center to another without interrupting the overall program of their training. The program for the training of younger men in the Naval Medical Corps will consist of a five year period, during which time the medical officer will be assured of his internship and one or two years of resident training. In view of the fact that sea duty is necessary to maintain the Medical Department afloat, this must be included in the program. During the customary two years at sea, one year at least will be spent either on a hospital ship or on duty at some overseas base, and one year will be used aboard battleships, cruisers and other vessels. Following the tour of sea duty the young medical officer will return to one of the training centers for at least two years of intensive work in the specialty which has been decided on by the Advisory Board following his request for further training. At the present time these postgraduate training centers are being planned at Chelsea, Mass., St. Albans, L. I., N. Y., Philadelphia, Bethesda, Md., Great Lakes, Ill., Long Beach, Calif., Oakland, Calif., and Seattle. Not all centers will have training in all the specialties, and the selection of the specialty will depend on available clinical material and competent instruction. In view of the fact that civilian residencies and fellowships are designed primarily to meet the requirements for certification of special practice, these requirements are to be met at the training center. The availability of veterans as patients in these training centers will increase the clinical scope and allow for better overall teaching. It is contemplated that these training centers will develop into as valuable opportunities for postgraduate study as the present teaching plans of universities and other centers of medical education.

A word should be said concerning the sea bases at which hospitals are maintained where courses of instruction will be carried out as far as possible. We shall have bases in the Hawaiian Islands, the Marianas, the Philippines, the Canal Zone, San Juan, Puerto Rico and Guantanamo, Cuba. In addition to these there will be four hospital ships on which training will be given. Complete records of attendance on these courses will be maintained at the Bureau of Medicine and Surgery for the convenience of giving credit for these courses as well as for assisting in planning and arranging for the courses. Thus, a young medical officer who enters the Navy will immediately enter on a postgraduate course over a period of five years. Instruction will be provided in all of the American Board specialties. His course will be planned in the Bureau of Medicine and Surgery, and definite time will be allotted for his participation in these courses. On completion of sea duty he is to return to one of the centers for further instruction in the specialty which he has requested and which has been approved by the Board.

It is conceivable and probable that places for instruction will not be available for all the members of the Hospital Corps. Therefore the men will be selected according to their aptitude, their industry and their interest in the specialty which they have chosen. In setting up these centers, opportunities will be given to men who prove themselves worthy of further instruction, and every effort will be made to provide them with courses of instruction which meet the requirements of the different medical organizations and specialty boards and equal to or superior to those which they could obtain in civilian life.

ENROLMENT OF MEDICAL STUDENTS

Dr. Johnson, chairman of the Subcommittee on Enrolment of Medical Students, submitted the following progress report:

Dr. Harold Diehl of the Procurement and Assignment Service has collected data from twelve colleges and universities which in 1942 supplied about 10 per cent of medical school freshmen. Premedical enrolments in these schools indicate that an entirely inadequate number of freshmen of good quality will be available for 1946 freshmen medical classes.

This problem is scheduled for immediate consideration by the new committee on deferments of the Office of War Mobilization and Reconversion. Even if deferments should be made now, it is already too late to provide many students for the 1946 entering classes, but such deferments would materially improve conditions for 1947.

This subcommittee and the Council on Medical Education and Hospitals have recommended that qualified men in the armed forces should be released for premedical studies and that qualified civilians should be deferred. These recommendations have also been made to the Senate Committee on Military Affairs by Col. W. Paul Holbrook, who was appointed by the Senate committee to study this problem. There is now some indication that the Selective Service System and the Army may be ready to move in the recommended direction in the near future. We are recommending to the Selective Service System that men in science studies including premedicine on reaching the age of 18 should be deferred until the completion of the academic year. This would assist materially, since further adjustments might be possible at that time.

The progress report was adopted after discussion.

VETERANS ADMINISTRATION

Father Schwitalla, chairman of the Subcommittee on Establishment of Medical Corps in the Veterans Administration, reported on the bills before Congress with reference to reorganization of the Veterans Administration.

The Committee adopted a motion that the subcommittee be empowered to pursue its efforts toward the establishment of a commissioned medical corps in the Veterans Administration.

EDUCATIONAL PROGRAM UNDER THE G. I. BILL OF RIGHTS

Father Schwitalla, chairman of the Subcommittee to Confer and Cooperate with the Veterans Administration, presented the following report:

The Subcommittee to Confer and Cooperate with the Veterans Administration on the educational program under the G. I. bill is made up of Dr. Coller and myself. We have been fortunate, however, in having the assistance of Dr. Victor Johnson. I have attempted to contact Dr. Coller at the various stages which I am about to report but have not succeeded in all instances. I have his assurance that I am free to mention any of the matters pertaining to the developments which have taken place even of those concerning which I have not been able to consult him.

Shortly after the last meeting of this committee on September 22, word was received from Mr. Sidney Post Simpson, educational adviser on veterans' programs of the Practicing Law Institute, New York City. The practicing Law Institute acted as spokesman for the American Bar Association, the American Institute of Accountants and probably for the American Institute of Banking with reference to the proposed amendments to the G. I. bill as embodied in H. R. 3749. Mr. Simpson suggested that the amendments to the bill which he was advocating on behalf of his principals were such as probably would commend themselves to the American Medical Association and he inquired whether the American Medical Association would join in endorsement of the proposed amendments to Public Law 346. The amendments pertain chiefly to the amount of tuition payable under the act, subsistence and travel allowances, correspondence courses, books for home study, et cetera. After reaching Dr. Coller and Dr. Johnson by telephone, it was agreed first that a telegram be sent to Mr. Simpson, secondly that we request Hon. Edwin C. Johnson of Colorado, chairman of the Senate Subcommittee on Veterans' Legislation, to permit us to file a statement on behalf of the American Medical Association even at the last minute prior to the publication of the proceedings of the hearings on the G. I. bill which would be held in Washington and, thirdly, that a draft be prepared immediately expressing the interest of the medical profession in the proposed amendments particularly as far as these have a bearing on the educational opportunities for physician veterans. The following telegram was sent to Mr. Simpson:

"The educational problems of the medical profession with reference to the G. I. Bill are substantially similar to the educational problems of the legal profession. If the subcommittee on the Veterans' Educational Program of the Committee on Postwar Medical Service of the American Medical Association had the opportunity of presenting its points of view, these would be found to be in substantial agreement with the views expressed in the document 'educational needs of lawyer veterans.' It is still the hope of the medical group that some of its problems can be solved by changes in the regulations. It may well be however that, to effect certain desirable changes, amended legislation may be necessary."

With reference to the second point, the hearings before the Senate subcommittee were held October 8 to 12 inclusive. It was not possible at the time to secure representation for the Committee on Postwar Medical Service, and some time had to elapse before an adequate statement could be prepared. Fortunately, Senator Johnson agreed to embody any statement made by our subcommittee in the protocol of his hearings.

Accordingly, a statement was prepared by the subcommittee at a special meeting in Chicago at the headquarters of the American Medical Association on October 19. After presenting facts concerning the competence of the subcommittee to represent the Committee on Postwar Medical Service, the statement requests that legislation be clarified with reference to "(*a*) the recognition of the hospital as an educational institution for the education of residents and (*b*) the recognition of the resident as a student of medicine rather than only as a professional person giving service to the hospital or to the patients in the hospital." Five amendments to the present G. I. bill are requested at the end of the presentation:

1. That there be introduced into the act, wherever such introduction is proper, a word or words to indicate that the hospital is an educational institution with reference to the objectives of Public Law 346 or any amendments or developments of it;

2. That physician veterans acting as residents in properly approved hospitals be recognized as "students," again within the objectives of Public Law 346, and that, accordingly, hospitals should be entitled to tuition payments for the education of such residents;

3. That all physician veterans be declared eligible for the educational benefits conferred by the amended G. I. act irrespective of their age, and even though they have been holders of the M.D. degree for years; in other words, that any restrictions such as that now contained in the regulations requesting proof that the veteran's education has been interrupted by the war should be eliminated;

4. That refresher courses should be paid for on the basis of the tuition charges made by the institution and such payments should not be limited by such restrictions as are now found in the regulations;

5. That a declaration be included in the amendments permitting physician veterans to participate in the educational benefits by beginning their studies even during their terminal leave and before the date of their actual discharge.

The entire document with its recommendations was actually printed in a public document entitled "Amendments to the Servicemen's Readjustment Act of 1944. Hearings before a Subcommittee on Finance, United States Senate," page 366.

I wish next to refer to Report No. 926 of the House of Representatives, giving Mr. Rankin's report on H. R. 3749 to the Committee on World War Veterans' Legislation. This bill amends the Servicemen's Readjustment Act of 1944. The following quotation from Mr. Rankin's report is pertinent to the recommendations made by this subcommittee:

"Title II of the act, pertaining to education of veterans, would be liberalized by extending the time in which a course can be initiated from two to four years after either the date of discharge or the termination of the present war, whichever is the later, and by extending the period during which education or training may be afforded from seven to nine years after the termination of the present war. It will provide for short intensive postgraduate or vocational courses of less than thirty weeks, with a provision that there shall be charged against the veteran's period of eligibility the proportion of an ordinary school year which the cost bears to $500. The rate of subsistence allowance will be changed from $50 to $60 per month if the veteran is without a dependent or dependents and from $75 to $85 per month if he has a dependent or dependents."

I wish to report on a meeting at the Veterans Administration, Washington, D. C., attended by the solicitor of the administrator, Mr. Edward E. Odom; the director of Vocational Rehabilitation and Education Service, Mr. H. V. Stirling; the chief of the Education and Training Division, Mr. Abbott L. Combs; the chief of the Advisement and Guidance Division, Mr. Ira D. Scott; and, for the Committee on Postwar Medical Service, Dr. Victor Johnson, Dr. Frederick Coller and myself. At this meeting the discussion centered chiefly on the question whether it would be possible to achieve the purposes which we all have in mind, that is to secure the recognition of the hospital as an educational institution and of the physician veteran serving a residency as a student, through regulation or a reinterpretation of the regulations, or whether, to secure this purpose, new legislation is necessary. It was agreed that new legislation would not be required and that, if the Administrator of Veterans' Affairs can be assured by the appropriate officials of his own agency that the regulations are sufficiently flexible to include hospitals under educational institutions, the committee's purposes could be achieved. The further question was raised concerning the amendments to the existing law recommended by the subcommittee. Mr. Odom assured the Committee that these details were included in the amendments contemplated by the Finance Committee of the Senate, which had held hearings on H. R. 3749.

It was determined finally that on behalf of the subcommittee a letter should be addressed to General Bradley concerning the definition of the hospital as an educational institution for the purpose of Public Law 346. The letter was transmitted to General Bradley under date of November 9. It contains an explanation of the problem and then formulates the problem as follows:

"In the light of these facts, we strongly recommend that hospitals conducting acceptable residency programs be considered as educational institutions eligible for tuition benefits under Public Law 346 as amended, whether or not the hospital is affiliated with a medical school and provided the hospital demonstrates that the educational program involves a financial outlay by the hospital. We also recommend that physician veterans enrolled for such education be considered eligible for subsistence benefits under the law, provided these veterans are otherwise eligible."

The letter was answered under date of November 29, 1945. The essential part of the answer is the following:

"I am advised by the solicitor, and concur in his opinion, that the training contemplated in connection with residencies and fellowships is not "training on the job" within the contemplation of the Servicemen's Readjustment Act but is in the nature of institutional training. It, therefore, is not subject to the prohibition contained in the act against paying institutions for affording "training on the job."

Finally, I wish to report a resolution unanimously adopted by the House of Delegates of the Michigan State Medical Society at its Detroit session. It should be noted that the resolution pertains to the tuition payment for refresher courses lasting for shorter periods than thirty weeks. Public Law 346 authorizes payment to an amount "which bears the same relation to the maximum amount allowed . . . as the length of the course bears to an ordinary school year of thirty weeks." In the amendments, Mr. Rankin in his report states that H. R. 3749 "will provide for short intensive postgraduate or vocational courses of less than thirty weeks, with a provision that there shall be charged against the veteran's period of eligibility the proportion of an ordinary school year which the cost bears to $500." The amendment does not in reality touch the problem raised by the Michigan State Medical Society. It is recommended, therefore, that the resolution of the Michigan State Medical Society should be transmitted with the endorsement of the Committee on Postwar Medical Service to the appropriate agency in Congress when and if it becomes apparent that such transmissal will be effective.

After lengthy discussion, the report was accepted with thanks as one of progress, and the Chairman announced the appointment of Dr. Johnson as an additional member of the subcommittee. The Chairman also stated that the subcommittee would continue to have the same authority to investigate and take action as in the past.

DEMOBILIZATION OF MEDICAL OFFICERS

Dr. Coller, chairman of the Subcommittee on Formulation of Lists of Medical Officers to be Considered for Demobilization, presented the following report:

This is a terminal report. This subcommittee was activated last spring even before the end of the war in Europe, and conferences were held with the Surgeon General of the Army and the directing board of the Procurement and Assignment Service at which a method was worked out whereby it was hoped that certain teachers would be released from the armed forces. A total of 256 medical officers considered essential teachers by their medical schools were given opportunity to leave the service and resume their teaching positions.

ACCELERATION OF DISCHARGE OF MEDICAL OFFICERS

General Lull informed the Committee, and Colonel Piper substantiated his statement, that at least 15,000 physicians would be separated as of Dec. 1, 1945, with 15,000 more out of service by March 1, 1946. General Lull and Colonel Piper concurred

in the statement that by the 1st of March 1946 about 15,000 physicians will be left in service and about 5,000 ASTP men will be on duty by the 1st of July 1946.

Captain Eaton stated that the essential list of Navy medical officers who are former instructors or teachers in institutions contains 126 names. Of these 66 remain. Thirty-nine of the latter have enough points for discharge and may be out already. We have no means of checking, as this is a field matter and probably disposed of by this time. Twenty-seven of the 66 have not put in for release or otherwise are not accounted for. When these apply they will be discharged. Five of these will have enough points by Jan. 1, 1946. All of 66 could go if they would apply. With regard to those who have enough points to get out and who have not yet been discharged, the difficulty is in getting suitable relief to take the place of the dischargee. Six hundred are on the sick list and 2,500 are in transit, so that the delay is a matter of circumstances.

Originally 60 points were required for discharge. On Nov. 1, 1945 these were lowered to 53 and on January 1 will be lowered to 51, and it is possible that the number will be less than this according to conditions.

RELEASE OF MEDICAL OFFICERS ASSIGNED TO VETERANS ADMINISTRATION

Colonel Mella stated that the same criteria apply to the Veterans Administration as apply to the Army of the United States and that, as of Dec. 15, 1945, a large number of A. U. S. officers assigned to the Veterans Administration would be demobilized. He further stated that about 60 per cent of those eligible for discharge asked to stay with the Veterans Administration and of the 40 per cent who desired to leave a great number are trying to call back their requests. He also said that the Veterans Administration was of the opinion that a proportion of the ASTP men should be assigned to the administration. Colonel Piper stated that medical officers now being assigned to the Veterans Administration are those who were formerly on duty with the Administration in a civilian capacity, those who volunteered for such duty and ASTP students, physically disqualified for duty with the Army but physically qualified for duty with the Veterans Administration.

The report of the subcommittee was accepted.

NATIONAL RESEARCH FOUNDATION

The Chairman announced that he had received a letter from Dr. Francis Blake, chairman of the Subcommittee to Study the Bush Report on Proposed National Research Foundation, in which it was stated that the subcommittee had no additions or changes to make in the report submitted to the Committee at the September meeting.

Dr. Austin E. Smith, Secretary of the Council on Pharmacy and Chemistry of the American Medical Association, presented the following statement:

By now, practically every one recognizes that the federal government is certain to provide funds for research. This is inevitable, although not all are agreed that it is advisable. The doubt that exists in some minds is based on the fear that government subsidy of research may result eventually in the control of research, a fear which, in my mind, is justified unless a sound foundation is laid before the funds are distributed. All of us want to see more and better research. All of us want to see provided, if possible, sufficient funds to make research even better than it has been. All of us want to see such funds allocated in a fair, just and productive manner. None of us, it is certain, want to see research become another political football.

With these thoughts in mind, the Council on Pharmacy and Chemistry has voted approval of the underlying principle which motivated the Vannevar Bush report and of the basic principles of the report itself. This committee has already received from the Council office a communication concerning the Bush report. My personal convictions are in harmony with the furtherance of research such as has been visualized by some of our better researchers. They are not entirely in harmony with all who have expressed thoughts on the foundation and who have advocated certain proposals for action. It is evident that whatever scheme is adopted will have to be sufficiently flexible to be adjusted as experience is gained. It is evident that there should be fair representation of medicine on the directing board, as on medical research depends much of this country's future economically and otherwise. It is evident that there should be a minimum of confusion when bills are passed, plans laid and activities begun.

For these reasons and others, I would urge that social sciences be not considered, at least at this time, with physical and medical sciences, that the funds and personnel be not handled in such a way as to provide unyielding and inhibitive demands and that the directing forces stem from individuals who can truly visualize the breadth and importance of research. In the same sense I would like to see less argument concerning which is the best available bill and more thought concerning what is the best possible bill. So far there has been much discussion centering around the method of appointing a director and board for the foundation. The selection is vitally important. It will make or break the project. At this time, based on experience gained elsewhere, it would seem best to keep directorship out of political battlefields.

If it were possible always to regard the whole setup as an experiment that could be changed in toto if experience indicated, there would be less need to worry concerning the actual details of operation. Unfortunately, it is often less difficult to establish something than to abolish it, even when the project eventually proves disappointing. I myself hope that the foundation will be even more successful than is expected. Its success, however, will depend on the interest taken by the best men in the country and that interest must be continued, forcefully if necessary, as long as the foundation is in existence.

Dr. Smith then offered a recommendation that the Committee on Postwar Medical Service have a subcommittee which will continue to watch all attempts at research under federal auspices, the National Research Foundation and any other research promotions to see if any good is coming from them, whether they are being politically controlled and who is getting the most benefit.

Dr. Smith's statement was received with appreciation.

THE MEDICAL PROFESSION AND MEDICAL EDUCATION IN THE PHILIPPINES

Miss Switzer reported that she had presented to Commissioner McNutt the statement adopted by the Committee on Postwar Medical Service at its meeting in September offering its support to any program which he might develop for the use of surplus supplies or materials to help in the Philippine situation. Miss Switzer read the following memorandum:

Dr. Howard Smith and Mr. McNutt are very appreciative of the proffer of the committee on Postwar Medical Service to help in any way possible in the rebuilding of the Medical School of the University of the Philippines at Manila. Dr. Smith told me that the dean of the school, Dr. Antonio Sison, attended the meeting of the Association of American Medical Colleges recently held at Pittsburgh and secured the cooperation of that group. He felt that the organizations represented on our committee could perhaps be most helpful by the donation of materials. Dr. Sison secured a generous offer from the Blackstone Publishing Company to send to the university library copies of their medical books now available. Dr. Smith felt that one of the choicest gifts to the library would be copies of the *Philippine Journal of Science*, since the whole file of this magazine was destroyed; it is very valuable for that area. Suggestions as to where copies of that journal may be available would be most helpful, since practically everything in the library was destroyed. Any contributions of files of magazines or reprints will help. The medical society's files were not completely destroyed but will need supplementation.

Dr. Paullin, who, when it was known that he was to go on a mission to the Far East for the U. S. Navy, had been requested by the Committee on Postwar Medical Service and the Board of Trustees of the American Medical Association to learn everything possible as to the situation there, presented a comprehensive report, which was received with appreciation. (Dr. Paullin's report was published as a part of the proceedings of the House of Delegates in THE JOURNAL, Dec. 22, 1945, p. 1178, under the heading "Much Needed Assistance to the Philippines.")

The Chairman stated that it is planned at the headquarters of the American Medical Association to provide subscriptions to the Association's periodicals and to send other medical literature to the Philippine Medical Association and to the University Medical School and Hospital, that Dr. Peter Bassoe of Chicago only a few days prior to his death had donated his personal library for disposal by the American Medical Association to a deserving cause, and that it was the intention of Dr. West to ship that material to the Philippines as soon as possible.

LICENSURE OF RETURNING MEDICAL OFFICERS

Dr. Bierring presented the following report, which supplements the report submitted by him at the meeting of the Committee in September:

1. Admission to licensure by state medical boards of graduates of unapproved medical schools who have demonstrated their competence in connection with their military service: As stated in the previous report, Illinois and Massachusetts admit to licensure graduates from unapproved medical schools located in their respective states.

At a meeting of the Massachusetts Board of Registration in Medicine Nov. 17, 1945 the following policy was adopted:

"Graduates of unapproved medical schools who have demonstrated their competence in connection with their military service would be obliged to take our regular examination and would be graded 10 points for their military service."

It would appear from this action that the Massachusetts Board is admitting to examination graduates from unapproved medical colleges located in other states.

In the first report the special provision for hospital graduates in New York State was stated as follows:

"The Veterans Committee will pass on all such applications, and if they can show one or two years of military service during which time they have been actively engaged in medical or surgical work the board will endeavor to admit them to the licensing examination. If they have not had active medical or surgical work while in the armed forces, one year of attendance at an approved medical school will be accepted,"

and this evidently still prevails.

There is no change regarding this problem in any of the other states.

2. Licensure requirement for hospital residencies: As stated in the first report, the following states and the District of Columbia require a license from a hospital resident: California, District of Columbia, Illinois, Indiana, Kansas, Michigan, Minnesota, Nevada, Ohio, Oklahoma, South Carolina and Wisconsin require a license from a hospital resident.

Nebraska and Texas require a license if the resident engages in independent practice.

Rhode Island requires a license after one year of residency.

New Jersey requires a license after two years of residency.

Puerto Rico requires a license for resident, but the license is granted without examination.

Since the last meeting of the committee an effort has been made to have state boards consider hospital residencies as a part of postgraduate training, particularly as it applies to the returning medical officer.

Replies have been received on that question from the following states:

California: State law still requires licensure for hospital residencies. No provision is made for army or navy medical officers under any conditions. Must secure license under the existing laws.

District of Columbia: If returning medical officers perform duties of interns only no license required. If they diagnosed and/or treated on own responsibility, license required. Local medical practice act contains very broad definition of practice and requires all who practice locally to have District of Columbia license.

Illinois: Rules of this department have not been amended to exempt medical officers from licensure requirement during residency except as to the completion of the first three months' service which may be required to complete twelve months' hospital work required by Illinois law.

Indiana: No change in present regulations.

Kansas: No change.

Louisiana: Residencies in private hospitals must have license. The Charity Hospitals in New Orleans and Shreveport are exempted.

Michigan: Previously we have sent you the opinion of our attorney general in that the Michigan State Board of Registration in Medicine has no authority to exempt from Michigan medical licensure other than the internship period which the board is authorized to fix, completion of which Michigan medical licensure is essential.

Minnesota, Nevada, Oklahoma, South Carolina and Wisconsin: No change.

Ohio. Dr. Herbert M. Platter, secretary, Ohio State Medical Boards: "Believe matter could be handled under supervision of the staff.

Massachusetts: At a recent meeting adopted the following policy regarding returning medical officers for hospital residencies in the specialties: "There is no examination for this type of license. The applicant furnishes the board with proof that he is 21 years old, is of good moral character, has completed creditably not less than three and a half years of study in medical school and has received an appointment as an intern or resident or fellow in a hospital conducted by commonwealth, county, city or incorporated under laws of the state. Fee for such registration is $5, issued for one year and may be extended for not more than three years. Such registration limits work of resident, fellow or intern to the four walls of the hospital where he has his appointment."

It seems evident that, aside from the several exceptions noted, the state medical boards require state licensure for hospital residencies and are not inclined to accord special consideration to returning medical officers and to exempt them from state licensure in accepting hospital residencies as a part of postgraduate training.

At the meeting of the council of the Association of American Medical Colleges in Pittsburgh, October 29 and 30, the following resolutions were adopted:

"WHEREAS, The hospital residency is generally recognized to be an essential education experience in the various special fields of medicine; and

"WHEREAS, The hospital residency is required by the several specialty boards as prerequisite for admission to examination by those boards; be it

"*Resolved*, That the Association of American Medical Colleges requests the Federation of State Medical Boards to effect such changes in their respective state laws or regulations as will permit graduates in medicine to pursue such educational opportunities as are approved by the specialty boards, the Council on Medical Education and Hospitals of the American Medical Association and their respective boards without formal licensure to practice medicine during this period of training."

This resolution and other matters pertaining to licensure problems affecting the returning medical officer will be considered at a meeting of the executive committee, Federation of State Medical Boards, on Dec. 3 and 4, 1945.

Subsequent developments in the foregoing problems will be reported at the next meeting of the Committee on Postwar Medical Service.

The report submitted by Dr. Bierring was accepted.

REPORT TO HOUSE OF DELEGATES OF THE AMERICAN MEDICAL ASSOCIATION

The report of the Committee on Postwar Medical Service to the House of Delegates of the American Medical Association, prepared by the Chairman, was presented and was approved by the Committee. This report was published as a part of the proceedings of the House of Delegates in THE JOURNAL, Dec. 22, 1945, page 1185.

MOTION REGARDING SURPLUS MEDICAL AND DENTAL SUPPLIES

A motion offered by Dr. Camalier, recommending that there be a more liberal interpretation of the present surplus property law or changes in the regulations or a change in the Surplus Property Act in order that returning medical and dental officers might obtain needed material more promptly, failed of adoption.

In view of the importance of the dental portion of the surplus property problem, the Chairman, with the approval of the Committee, appointed Dr. Camalier as an additional member of the Subcommittee on Surplus Medical and Hospital Supplies.

TIME AND PLACE OF NEXT MEETING

It was decided that the next meeting of the Committee would be held at American Medical Association Headquarters at 10 a. m., Jan. 12, 1946.

The meeting adjourned at 1:20 p. m.

Council on Medical Service and Public Relations

IOWANS OPPOSE COMPULSORY HEALTH INSURANCE

The Iowa Poll revealed in its first survey on the compulsory health insurance issue that Iowans oppose President Truman's plan. According to a news release in the Des Moines *Register*, Dec. 16, 1945, "among those who would like to have Congress enact the president's recommendation into a law, about one in four would not be willing to pay 4 per cent of income to have the plan."

The question asked was as follows: "President Truman recommends that Congress pass a law setting up compulsory health insurance. Under his plan, sickness expenses such as doctor bills, hospital bills and dentist bills would be paid by the government out of a new tax on people's earnings. Do you think Congress should pass such a law?"

The resulting answers showed:

	Total	Men	Women
Yes	40%	42%	39%
No	49%	51%	48%
No opinion	11%	7%	13%

U. S. DEATH RATE UNDER PREWAR

The recent monthly press release by the Institute of Life Insurance pays tribute "to the care the American people have taken in the face of wartime work pressure and the acute shortage of doctors." The report shows that the death rate among civilian owners of life insurance policies may prove to be the lowest on record except for 1942.

The release reports the following:

Heart disease continued in the lead as the major cause of death, accounting for 30 per cent of civilian policyholder deaths, although the rate was not much changed from that of 1944. The current death rate from diseases of the heart and arteries is 6 per cent above that for prewar 1941. Cancer, second in importance, accounted for 15 per cent of civilian deaths and showed an increase over both 1944 and 1941.

Offsetting the increase in deaths from heart disease and cancer, there have been improvements in other directions, with sharp reductions in some cases. Deaths from the major children's diseases have dropped materially from last year and are about one third below prewar. The tuberculosis death rate is 7 per cent under 1944 and 12 per cent under 1941, contrary to past wartime trends. The death rate for influenza and pneumonia this year is nearly one third below last year and 1940, although an epidemic of respiratory cases, not yet serious, was reported at the end of the year.

One especially disconcerting change of the year is that involving automobile accidents, the death rate from which has sharply increased since lifting of gasoline rationing.

THE STATUS OF THE ENGLISH DOCTOR

(The following article was submitted by Capt. Paul K. Maloney, M. C., A. U. S., a member of the Kings County Medical Society in New York, to the Bulletin of that medical society. It is here reprinted for the general information of American physicians as to the present technic of operation of the panel system in Great Britain.—Ed.)

This material was obtained from one of the general practitioners in Kidderminster, a city with a prewar population of 30,000 which has now risen to 60,000. He is a man who has practiced "panel medicine" for ten years and has made a success of it, as far as that is possible. He has answered all questions frankly and analytically without trying to cover up the defects of the system.

This article will deal only with the practical aspects of the doctor-patient relationship and with the financial status of the doctor, rather than with the complicated and extensive administrative machinery that has come into existence. The object here is to outline how the average British citizen obtains medical care for himself and his family. For that reason the information is presented in three parts:

I. The machinery to provide the wage earner with ordinary general practitioner's care. This is called National Health Insurance and is regulated by law.

II. The machinery to provide the same thing for his dependents. This is a private venture, undertaken by a group of doctors who organize a "public medical society" for the purpose. Financial arrangements vary somewhat according to the charter of this society.

III. The machinery to provide consultant's services and hospitalization for both the wage earner and his family. This is undertaken by the "voluntary hospitals," which are run by the city or county and supported partly by private donations and partly by small subscriptions from those who wish to have a hospital insurance.

I. National Health Insurance

National Health Insurance has existed in England since about 1911, when it was passed under the sponsorship of the then Premier Lloyd George. At first it met with much opposition from the medical profession, and there were many doctors who refused to take on a panel. Wherever the system threatened to fail because of this, the government placed young medical graduates in the recalcitrant locality. This was not difficult, because in England a doctor must buy a practice when he starts and there were plenty of young men who here saw a chance to acquire a practice (even though it was only a panel practice) without having to pay the usual sum of £3,000 to £10,000 for it. Since then, health insurance has been accepted by the vast majority of doctors as an inevitable institution. In Kidderminster, of a total of thirteen doctors eleven practice panel medicine.

National Health Insurance will be discussed under the following headings:

1. What people are insured.
2. What service is provided.
3. Financial arrangements.
4. The "Approved Society."
5. The status of the doctor (*a*) financially, (*b*) professionally.

1. *What People Are Insured.*—The scheme includes every wage earner, male or female, married or single, between the ages of 14 and 64, with an income of less than £420 a year (until the war this figure was £250). The fees are deducted automatically from the pay check, so that the system may be said to be compulsory.

When the wage earner is temporarily unemployed, the state continues the payments for him, *provided he is on the dole.*

When the wage earner reaches the age of 64 he stops paying all fees, becomes entitled to the old age pension and remains insured for the rest of his life.

When he stops paying before the age of 64 (this would be impossible with people getting regular pay checks, because the deductions are automatic) he remains insured for two years after his delinquency.

People whose income is not paid in the form of a wage, such as shopkeepers, farmers and small pensioners, may make their payments quarterly. They do come within the provisions of the law, as long as their income is less than £420.

The £420 limit means that well over 90 per cent of the population of England is included.

2. *What Service Is Provided.*—This includes ordinary physician's care, office as well as house calls. No surgery except the most pedestrian kind, such as lancing a boil. The scheme also allows for some drugs, but only the less expensive ones. For those who belong to an "Approved Society" it is sometimes possible to get spectacles and dental and surgical appliances free of charge.

3. *Financial Arrangements.*—Payments are made by the week or month. They are divided equally between the employee and the employer, with the employer paying the odd penny if there is one. The total weekly contribution for individuals of 18 and over is 1 shilling 7 pence (1/7), of which the employer pays 10 and the employee 9. For an additional 3 pence (/3) it is possible to secure a very small "sickness benefit," that is an allowance during illness, but it does not amount to more than 10/ a week and only for a limited time. The /3 is paid by the employee. Shopkeepers, farmers and pensioners pay 1/5 a week, all themselves. The money is collected automatically by pay check deduction and a 1/7 stamp is pasted in a special card that is provided for this purpose. The stamps are bought at the post office.

Thus, the fund collects fifty-two times 1/7, or about 82/ a year. This is apportioned as follows:

For the doctor, 10/6, or 12.5 per cent
For drugs, 3/, or 3.5 per cent.
For mileage fees at the rate of a shilling per mile per year, /6, or 0.5 per cent.
For administrative overhead, 68/, or 84.0 per cent.

Attention is called to the disproportion of what the doctor gets and what the state collects. Up until 1939, the Fund had accumulated a surplus of £144,000,000.

4. *The "Approved Society."*—This is a sort of private insurance company, organized to help administer the scheme and give certain extra advantages to the "good risks." Only those wage earners who make separate application and who can pass a physical examination are accepted (the National Health Insurance Act itself makes no mention of a physical). The chief object of the approved society is to provide "sickness benefits," that is, small weekly payments to those who are ill and cut off from their regular source of income. It has already been pointed out that for an additional /3 a week the insured person may get a government sickness benefit, but the payments are small (not more than 10/ a week) and last only as long as there is a cash balance in his particular account. The approved society, on the other hand, is authorized to collect 4/10 out of the 82 shillings that is taken in for each individual who is a member. For this it gives:

(*a*) A sickness benefit of from 18/ to 25/ a week, which is paid as long as the illness lasts. The variation of 18 to 25 depends on the society. The better ones pay the larger amount.

(*b*) "Grants-in-aid," that is, spectacles, dental appliances and surgical appliances, but only in limited amounts. A certain sum is set aside at the beginning of each year and, when this is exhausted, no further grants can be made until the next year. Usually, the fund is used up long before the year is out.

The people who cannot belong to an approved society because of some disqualifying physical defect such as hypertension or diabetes are called deposit contributors. It is optional with them if they want to belong and pay the extra /3 a week.

5. *The Status of the Doctor.*—(*a*) Financially. A successful, busy practitioner can handle a panel of 2,000. The upper limit, fixed by law, is 2,500. A panel of 2,000 yields a yearly income

of somewhat over £1,000. This may be increased slightly by the "certificates of disability" which the doctor writes for those whose illness compels them to stay away from work. Such a certificate costs the patient 1 shilling. Since 95 per cent of the cases are ambulatory, the profits on this score are small.

In Kidderminster, with a panel of 2,000, the doctor sees an average of 30 patients a day, or 9,000 a year, so that his pay per office or house call is 2 shillings.

(*b*) Professionally. Professionally, the doctor's position is not a happy one for the following reasons:

Inspectors come around regularly to inspect his records. If these fail to pass, the doctor is fined without further process of law anything from £100 to £200. If a patient is disgruntled, he can report the doctor, and the doctor is then investigated by a board, made up partly of laymen, partly of doctors. Again, the penalty is in the form of a fine, although this sort of trouble is usually squelched before it reaches a board. The fact remains, however, that a crackpot patient can cause the doctors no end of unpleasantness.

More irritating is the limitation in the allowance for drugs. Only certain inexpensive items may be prescribed. When two doctors in London, unaware of this, ran a large-scale scientific experiment on their aged patients by giving them large doses of cod liver oil and malt extract (the doctors acted in good faith and accumulated valuable data), they were fined £1,000. This raised such a furor that the affair was investigated in Parliament. Regretfully, Parliament had to agree with the verdict because it was within the purlieus of the law.

Further, there is the limitation of what the doctor may do for his patient. The law says he may do only what is commonly considered to be within the province of the general practitioner. This definition has been tested repeatedly in court and has been very narrowly interpreted. For instance, a doctor may not inject hemorrhoids, give diathermy, remove polyps or electrocoagulate warts. In fact, about the only thing he can do is to prescribe some inferior drug and he resorts to that abundantly. If the patient needs a consultant or an operation, he must be sent to the hospital. The practitioner then loses track of his patient altogether, but a few with special training may apply for staff privileges. In Kidderminster, out of a total of thirteen physicians, there are only two who may operate. These are paid a small fee when they operate on a panel patient. An appendectomy nets them £1.

The average office call for a panel patient lasts three minutes: one minute to usher the patient in and out, one minute for the questioning and examination, and one minute for the writing of the prescription and the records. Since the doctor also sees many "club patients," his average daily quota of patients is from 60 to 70, about three quarters office work and one quarter house calls. His day lasts from 9 in the morning till 8 in the evening. He takes one afternoon a week off, plus his Sunday, and a two to three weeks vacation every year.

II. The Public Medical Society

To provide the wage earner's dependents with this same sort of care, doctors organize locally what is called a Public Medical Society, or "club." They hire an accountant, collectors and typists for the bookkeeping and take on a certain number of people on a sort of private panel. The average number per doctor is 1,000. The cost is 4 pence a week per individual up to a maximum of 1/4 for a single family. After that there is no further increase, so that very large families are not unduly penalized. The distribution of the profits is very interesting when compared with those of the National Health Insurance. It is as follows:

For the accountant, 7.5 per cent.
For the collectors, 12.5 per cent.
For the doctors, 80.0 per cent.

The main lesson to be learned here is that, when the state operates the system, the doctors get 12.5 per cent, but when the doctors themselves operate the system they get 80 per cent!

By having 1,000 "club patients," a practitioner can further increase his income about £660 a year. The subscribers are, of course, mainly women and children. Although they represent only half the size of the regular panel, they account for fully as many office calls, an average of thirty a day. Add to this 30 panel patients and the total becomes 60. A very ambitious man such as the one interviewed also sees about 10 private patients a day, who add some £400 to £500 a year to his income. Consequently his total income is about £2,000 a year, which is not bad even at home, but it must be remembered that he is now at the top of the heap as far as panel practice is concerned.

III. The Voluntary Hospital Contributory Scheme

To provide hospital care for the wage earner and his family there is still another scheme. It is operated by the hospitals themselves, as far as they wish to, and most of them do. A voluntary hospital exists from two sources, each one of about equal size: (1) private donations and charity drives; (2) small subscriptions by individual workers.

The fee for one wage earner and his family is 4 pence a week, to which the employer adds 1 penny, making a total of 5. There is no compulsion about it as there is about National Health Insurance. The 5 pence a week yields 21/4 a year. The Kidderminster Hospital collected £18,000 this way last year, about half its total operating cost. By being a "voluntary contributor," the wage earner insures hospitalization for himself and his family for no matter what ailment or what operation, chronics excepted.

The hospital in Kidderminster has a staff with one specialist for each of the important departments, such as surgery, medicine, x-ray and laboratory. None of these get paid, except for the surgeon, who gets £100 a year for being the head of the outpatient department. The radiologist gets no salary but has the privilege of using the department for his private patients. Consultants who must come from distant cities get a mileage fee of £100 a year.

Obstetrics, which is usually a large source of income for the general practitioner at home, is not so in England because 95 per cent of the work on indigent patients is done by midwives. Doctors are called in only when there are complications. The scheme is administered by the county, which pays the doctor 2/6 for each antepartum office call and 5/ for a house call. If the doctor does the delivery himself he collects 3 guineas and his anesthetist 1 guinea. This is paid by the county after an investigator has certified that the patient cannot pay. If the patient can pay something the doctor gets a corresponding fraction of his 3 guineas. Even in the very active practice of our informant, however, obstetrics played only a minor part.

Disadvantages of Socialized Medicine in England

The chief disadvantages of panel practice appear to be from this superficial survey:

1. The impossibility of doing good work because of the volume of work.

2. The restrictions on what the doctor can do for his patient in the office.

3. The discrepancy between the 10/6 for the doctor and the 68/ for the overhead.

NOTE.—For readers in the United States the shilling is worth about 20 cents and is written with a / sign. Thus, 5 shillings 4 pence is written 5/4. There are 12 pence to the shilling and 20 shillings to the pound.

Coming Medical Meetings

Annual Congress on Medical Education and Licensure, Chicago, Feb. 11-12. Dr. Victor Johnson, 535 North Dearborn St., Chicago, Secretary.

Conference of State Secretaries and Editors, Chicago, Feb. 8-9. Dr. Olin West, 535 North Dearborn St., Chicago, Secretary.

American Association of Pathologists and Bacteriologists, Chicago, March 8-9. Dr. Howard T. Karsner, 2085 Adelbert Road, Cleveland, Secretary.

American Orthopsychiatric Association, New York, Feb. 14-16. Dr. Nina Ridenour, 1790 Broadway, Room 916, New York 19, Secretary.

Chicago Medical Society Annual Clinical Conference, Chicago, March 5-8. Dr. Warren W. Furey, 30 North Michigan Ave., Chicago 2, Secretary.

Dallas Southern Clinical Society, Dallas, Texas, March 18-21. Dr. John G. Young, 1719 Pacific Avenue, Dallas 1, Director of Clinics.

Federation of American Societies for Experimental Biology, Atlantic City, March 11-15. Dr. D. R. Hooker, 19 West Chase Street, Baltimore 1, Secretary.

Southeastern Surgical Congress, Memphis, Tenn., March 11-13. Dr. Benjamin T. Beasley, 45 Edgewood Ave. S.E., Atlanta 3, Georgia, Secretary.

MATERNAL AND CHILD HEALTH SERVICES

Report of Annual Meeting[1] of the Children's Bureau Advisory Committees on Maternal and Child Health Services and on Services for Crippled Children. Children's Bureau, U. S. Department of Labor, Nov. 8 and 9, 1945.

The meeting was called by the Associate Chief of the Children's Bureau particularly to obtain advice on Senate Bill 1318 (H. R. 3922, H. R. 3994, H. R. 4059) known as the "Maternal and Child Welfare Act of 1945." To this end six committees were appointed from the members of the advisory committees to consider on November 8 various aspects of the proposed legislation and report their opinions to the general session of the committees on November 9.

The reports as modified and accepted or adopted in the general session and a statement by Dr. Eliot are transmitted herewith in accord with the unanimous recommendation of the general session in order to make them available for such use as each member of the Advisory Committees and the Children's Bureau might deem desirable.

* * * * * *

Report of Committee to Consider Basic Philosophy and Principles Pertaining to S. 1318

This committee discussed many fundamental principles pertaining to such legislation as proposed in S. 1318.

Certain reservations as regards the jurisdiction of the federal administrative agency under this bill, its departmental allocation and the integration of this agency, and the proposed maternal, infant and child medical care program with other federal health plans were discussed. Before giving critical consideration to the details of the proposed legislation the Committee wishes to make it clear that such consideration does not necessarily constitute an endorsement of the proposed allocation to a bureau in the Department of Labor of authority to develop and direct such an extensive medical care program.

The Committee recognizes the far reaching and significant contributions of the Children's Bureau to maternal and child health, especially in the fostering of high standards of medical and welfare services. However, in such a program as envisaged in this major step in the development of a federal health program problems of state's responsibilities and relationships with federal agencies are involved which demand consideration of the qualifications of the proposed agency for their conduct and consideration of ability to integrate the proposed program with those for the provision of health and medical services for the remainder of the population.

The Committee recommends that Congress give careful study to the problem of the proper agency to conduct this program and of the relationship between governmental agencies concerned with medical and health services.

Disapproval of paragraph (3), page 4, line 3 of section 103 was voted by 10 members, while 6 members voted approval.

The following modification (italicized) of paragraph (3), page 4, line 3 of section 103 was favored by 14 members and opposed by 3 members:

> (3) provide that as services and facilities are furnished under the plan they shall be available to all mothers and children in the state or locality *who are determined by the state health agency to be eligible and*[2] who elect to participate in the benefits of the program, and that there will be no discrimination because of race, creed, color or national origin, and no residence requirements;

Among the 14 who favored this modification were members who were opposed to the means test in principle but felt that the modification was essential to a tolerant consideration of such legislation at the present time.

It was also felt by some that if the application of a means test was left to each state the ultimate development through the nation of efficient plans for medical care, such as considered here, would not be jeopardized.

It was felt by others that this was a wholesome endorsement of state rights under such a program.

There was lengthy debate on the means of protecting medical education and through it the quality of medical care if such legislation as proposed in S. 1318 should be enacted. The Committee was in general agreement that careful consideration of the effect of such legislation on medical education and the quality of future medical care was essential if both were to be protected. Though no formal vote was taken, the Committee felt that perpetuation of medical indigence was not a prerequisite to good medical teaching and better medical care.

While no formal expression of opinion was expressed, it was pointed out that provision for the remuneration at the same rate whether the professional services were rendered by groups of professional personnel, including teaching units, or by individuals was desirable in terms both of protecting the quality of teaching service and of protecting the interests of individual physicians or other professional personnel.

Designation of members of the advisory committees of the Children's Bureau as individuals representing no organization or as the official representative of an organization was suggested. It was furthermore urged that a member who was designated as the official representative of an organization be given the power of negotiating for that organization.

In the general session November 9 this report was adopted unanimously.

Statement by Dr. Martha M. Eliot[3]

The policies of the Children's Bureau in its administration of the Emergency Maternity and Infant Care program have been referred to a number of times today and yesterday as possibly setting precedents that would not be desirable under a longtime program of services to mothers and children.

The Emergency Maternity and Infant Care program was satisfactory only as an emergency program. The Children's Bureau recognizes that, in the development of a longtime program, administrative authority of the federal and state agencies must be clarified and definitely placed. I believe that a longtime program should be state administered. I believe that under the Emergency Maternity and Infant Care program more responsibility and initiative had to be taken by the federal agency because of the emergency than would be desirable under a longtime program.

I would like to point out that S. 1318 is not an extension of the Emergency Maternity and Infant Care program for the following reasons:

1. The bill provides for an evolutionary development of the maternal and child health and crippled children's programs, state by state, over a ten year period on the basis of local and state needs and resources for meeting these needs.

2. The bill gives to the states the initiative for development of and the responsibility for carrying out state policies and procedures necessary for the operation of the state plan. The role of the federal agency would be to establish policies related to minimum standards for care and appropriate use of federal funds to carry out the purposes of the legislation.

3. This bill makes provision on a legislative basis for methods of maintaining and improving quality of care, which, under the Emergency Maternity and Infant Care program, had to be left to the Children's Bureau because of the emergency nature of that program.

1. Condensed from the report prepared by Dr. Alan C. Butler at the direction of the Advisory Committee.

2. The modification is indicated by the italicized portion.

3. Statement made by Dr. Eliot, Associate Chief, Children's Bureau, U. S. Department of Labor, at general session, Nov. 9, 1945, of Children's Bureau Advisory Committee on Maternal and Child Health Services and Advisory Committee on Services for Crippled Children and by direction of the Advisory Committees to be attached to the Report of the Committee to Consider Basic Philosophy.

4. The bill requires the Children's Bureau to obtain the advice of federal advisory committees, both general and technical, and of the state administrators concerned, before establishing federal policies to be used as guides in approving state plans. Furthermore, the bill provides for the same type of cooperation between the state administrative officials and the professional and public groups concerned.

The question of maximum fees to be paid from federal funds would, of course, have to be discussed and studied by the bureau with the professional and governmental groups concerned.

The Children's Bureau believes that the program proposed under this bill (S. 1318) would be one essential segment of a national health program and that it can and must be fitted into an overall medical care program when such is developed.

I would like to say further for Miss Lenroot and myself that we would have no objection to the transfer to another department with cabinet rank under conditions that would safeguard the integrity of the Children's Bureau and the services included in the Children's Bureau program. I would like to say further that Miss Lenroot and I would consider transfer of the Children's Bureau to an independent agency without cabinet rank as a great sacrifice for the bureau.

Majority Report of Committee on Availability of Services and Facilities

The meeting was opened by the Chairman reading subsection (3) of section 103, title I, of S. 1318, the "Maternal and Child Welfare Act of 1945":

(3) provide that as services and facilities are furnished under the plan they shall be available to all mothers and children in the state or locality who elect to participate in the benefits of the program, and that there will be no discrimination because of race, creed, color, or national origin, and no residence requirements;

A number of the medical members present felt that the bill was unacceptable to the medical profession without the inclusion of a means test. To these the provision of services of this kind at public expense seemed an undesirable lessening of individual responsibility. Any means test would have to be conducted on a local level and administrative expenditures varying from 35 cents to 60 cents to 80 cents per family would be necessary to carry out such a test, and probably in the groups close to the upper limit it might have to be repeated every six months.

Those in favor of the subsection, as read, felt that health, like education, was something to which every American child and mother during pregnancy and the postpartum period were entitled. That in view of the fact that 85 per cent of the families had an income of less than $2,500 per year, and 92 per cent less than $3,000, there would be no great group of children that would be getting this service undeservedly.

After a considerable discussion, the matter was finally brought to a vote. The motion was made "That the means test should be used in the administration of the Pepper Act." The vote was 5 for the motion and 8 against the motion.

In view of the fact that there was considerable opposition to the motion, the Chairman suggested to the minority that it hand in a minority report (which follows):

Minority Report

The minority group of the Committee on Availability of Services and Facilities dissents from the report of the majority on the issue of providing a means test to determine eligibility of individuals or families for participation in the services provided under proposed bill S. 1318. The minority believes that to offer medical service to all, regardless of economic status, in any population group, is an unwise procedure because:

1. It encourages excessive dependence on government and discourages individual self reliance.

2. It tends to congest services intended primarily for the underprivileged and thus to deprive them of full benefits.

3. It places a needless and undesirable burden on taxpayers, especially small taxpayers least able to bear it.

4. It competes unfairly with and tends to discourage established private and semiprivate agencies already rendering meritorious service.

The minority believes in a suitable means test, to be determined at state levels after consultation with appropriate official and social service agencies and medical societies, applicable to medical care aspects only and exclusive of established public health procedures and diagnostic services in preventive medicine.

Reports were received from committees dealing with Methods of Remuneration for Professional Services, on Scope and Extension of Services, on Research Projects and Methods of Establishing Standards of Care, and on Professional Education and Training.[4]

Medical Legislation

STATE LEGISLATION

California

Bills Introduced.—A. C. R. 6-X proposes a concurrent resolution to the effect that, when legislation is enacted to provide for a medical school and center at the University of California at Los Angeles, the Board of Regents of the University of California is urged to select for the location of the medical school and center a site within the area adjacent to the intersection of Vermont Avenue with Sunset Boulevard in said city.

A. 35-X proposes to authorize the appropriation to the Regents of the University of California of the sum of seven million dollars for the purpose of establishing, equipping and maintaining a medical school and center as a unit in the University of California at Los Angeles.

A. 37-X, to amend the business and professions code, proposes to increase the annual tax and registration fees of osteopaths from $5 to $10 for residents and from $2 to $10 for nonresidents.

A. 61-X proposes an appropriation of four million dollars to the Regents of the University of California for the purpose of additional construction, improvements and equipment for the Medical Center of the University of California at San Francisco.

S. 3-X proposes the acquisition of land and buildings for temporary state hospital facilities, such property to be operated by the Department of Mental Hygiene on a temporary basis as temporary state mental institutions.

Massachusetts

Bills Introduced.—S. 118, to amend the medical practice act, proposes that the laws relative to the eligibility of an applicant for registration as a qualified physician in force immediately prior to Jan. 1, 1941 shall continue to govern as to the eligibility of any applicant who shall have received the degree of doctor of medicine prior to the effective date of this proposal from an educational institution legally chartered by the commonwealth of Massachusetts having power to confer degrees in medicine.

H. 232, to amend the law relating to commitments of insane persons, proposes that such commitments shall be made only on the certification of two properly qualified physicians who have been selected by the judge having authority to commit, such physicians having been selected from lists prepared monthly by the judge.

H. 337 proposes the construction of an addition to the Westfield state sanatorium for the care and treatment of persons suffering from cancer.

H. 458 proposes that a veteran eligible for admission to the state Soldiers' Home may be hospitalized and treated at any public or private hospital when there are not sufficient facilities at the Soldiers' Home to care for such veteran. The cost of such hospitalization and treatment shall be paid by the state.

S. 27, to amend the law relating to divorce, proposes to authorize a decree of divorce where both parties are residents of the commonwealth and one of them has become incurably insane and has been confined for at least five consecutive years prior to the filing of the bill for divorce.

S. 90 proposes the enactment of a cash sickness compensation act.

S. 188, to amend the medical practice act, proposes to require every qualified physician to submit annually to an examination and test for venereal disease and to display prominently in his office a certificate of the board stating the date and result of the last examination.

4. This is a condensed report. Inquiries for further information should be addressed to the United States Department of Labor, Children's Bureau, Washington 25, D. C.

direction of the Advisory Committee.

2. The modification is indicated by the italicized portion.

of the Advisory Committees to be attached to the Report of the Committee to Consider Basic Philosophy.

Missouri

Bill Introduced.—S. 349 proposes the creation and establishment of a department of public health and welfare.

New York

Bills Introduced.—S. 97, to amend the law relating to animal experimentation, proposes to prohibit experiments or investigations on living dogs, even though performed under the authority of a medical college or university of the state.

S. 119 and S. 124, to amend the education law, propose to establish within the department of education a medical college to be known as New York State Victory Medical College, equipped to provide instruction for four thousand pupils.

Rhode Island

Bills Introduced.—H. 569, to amend the law relating to discrimination by any state department against certain professional groups of the healing arts, proposes to include chiropractors within the group against which no discrimination is allowed.

H. 575 proposes the creation of a special committee to study the several problems arising out of the administration of the cash sickness compensation act and to make recommendations for amendments thereto.

South Carolina

Bills Enacted.—S. 49, approved Jan. 10, 1946, has become Act No. 383, Laws 1946. It provides for the establishment of nonprofit corporations to operate hospital service plans whereby such corporations undertake to pay for hospital care rendered by hospitals to subscribers to such plans.

Washington Letter

(From a Special Correspondent)

Jan. 21, 1946.

Use of DDT Barred in Municipal Buildings

Although Washington is continuing its drive to rid itself of rats and its reputation as one of the most rodent infested spots in the nation, the District of Columbia government has turned thumbs down on the use of DDT as an insecticide in municipal buildings. The District health officer is working out an educational program with respect to the safe use of DDT as a fortifying agent for an insecticide. However, DDT dusting is continuing in a fifteen block area near the 200 block of K Street N.E., where typhus infested rats were found. The Metropolitan View Citizens Association in a letter to the House District Committee, the Senate District Committee, the District Commissioners and the Federation of Citizens Associations, meantime, has called for an investigation of the District Health Department. The association asks for an inquiry regarding delayed ambulance service to municipal hospitals, closing of tuberculosis wards while persons suffering from tuberculosis are not hospitalized, and alleged failure of health inspectors to take "prompt and effective" action against food purveyors whose establishments have been found insanitary.

Army Assigns 5,000 Medical Trainees to Special Duty

The War Department has announced that it will assign to duty with troops more than 5,000 young medical officers who have been studying at government expense in the Army Specialized Training Program. They entered the army as enlisted men and were placed in training which is now being completed through internships and residencies in civilian hospitals after graduation from medical schools. Surgeon General Kirk said that civilian hospitals have been informed so that they may obtain replacements.

Antivivisection Bills Presented in New York and Washington

Efforts to obtain passage of the Lemke bill to prohibit animal experimentation in the District of Columbia will be pressed during the present session of Congress. And from Albany it is reported that the bill to outlaw all medical experiments on living dogs was introduced in the New York State Senate by Senator Richard A. DiCostanzo, Republican of New York, and in the lower house by Assemblyman Irwin D. Davidson, Democrat of New York. A petition claimed to carry more than 119,000 signatures was presented to Governor Dewey in support of the DiCostanzo-Davidson bill. One New York newspaper (the *Journal-American*) has been aggressive in promoting the New York State antivivisection legislation, and similar material has been given prominence in a Washington newspaper (the *Times-Herald*). Early hearings on the District bill have been promised.

American Chemical Society Awards $210,000 for Fellowships

Fellowships totaling $210,000 will be awarded in 1946 and 1947 by the American Chemical Society to aid in training chemists and chemical engineers. President Bradley Dewey said that "predoctoral" students whose work was interrupted by the war will get $100,000. The remainder will go to holders of doctor's degrees who desire one or two years in research and teaching.

Hospital Sets Up Its Own Blood Bank

Since national appeals for blood donations have fallen off with the end of the war, Doctors Hospital in Washington has organized a blood bank to serve its patients on a nonprofit basis. The bank is an affiliate of the Community Blood Plasma Bank at George Washington University. Immediate donations are being sought to get the hospital bank in operation, and persons with type 4 and type O blood have been urged especially to donate now.

Date Set for Highway Safety Conference

Dates for the conference called by President Truman to try to reduce the mounting toll of deaths and injuries resulting from traffic accidents have been set as May 8 to 10 in Washington. The dates were chosen after the President conferred with several organizations promoting highway safety. Major Gen. Philip B. Fleming, federal works administrator, will preside, and Commissioner Thomas H. MacDonald of the Public Roads Administration will be conference director.

Injuries Cost Government $12,000,000 a Year

Injuries to government workers cost the government more than $12,000,000 a year, it was revealed at the recent conference of the Federal Interdepartmental Safety Council. A survey will be made immediately on existing safety work. First items to be examined will be agency accident rates and workmen's compensation claims. Programs of agencies with best records will be given special study.

Official Notes

THE SAN FRANCISCO SESSION

Special Exhibits on Fractures and on Physical Medicine; Section Exhibits for General Practitioner

The Board of Trustees has authorized two special exhibits for the Scientific Exhibit at the San Francisco session, July 1 to 5.

The special exhibit on fractures will be presented again under a committee composed of Dr. Kellogg Speed, chairman, Chicago; Dr. Frank D. Dickson, Kansas City, Mo., and Dr. Walter Estell Lee, Philadelphia. Demonstrations will be continuous throughout the week.

The special exhibit on physical medicine will include physical therapy, occupational therapy and rehabilitation. The demonstrations will be supplemented by motion pictures in an adjoining area. The committee in charge is composed of Dr. Frank H. Krusen, chairman, Rochester, Minn.; Dr. Winfred Overholser, Washington, D. C., and Dr. Howard A. Rusk, New York.

The seventeen sections of the Scientific Assembly will have groups of exhibits dealing with the various specialties of medicine. All exhibits will be presented for the physician in general practice rather than the specialist, however. Application blanks for space may be obtained from the Director, Scientific Exhibit, 535 North Dearborn Street, Chicago 10.

at state levels after consultation with appropriate official and

should be addressed to the United States Department of Labor, Children's Bureau, Washington 25, D. C.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

COLORADO

Personal.—Dr. Walter F. Peer, Brighton, has been appointed a member of the state board of public welfare, succeeding the late Dr. Arthur T. Monismith, Fort Lupton.

State Society Plans Jubilee Session.—The Colorado State Medical Society plans to hold its seventy-fifth annual session in Estes Park, September 11-14, with headquarters in the Stanley Hotel. A special program will commemorate the diamond jubilee of the medical society.

The Maurice H. Rees Scholarship Fund.—To perpetuate the memory of Dr. Maurice H. Rees, for many years dean of the University of Colorado School of Medicine, the board of regents has authorized the establishment of a fund to be known as the "Dean Maurice H. Rees Scholarship Fund." The scholarship, to consist of tuition and the income from funds donated by students, alumni, faculty and friends, is to be awarded each year to a student entering the junior class of the school of medicine who has shown, in addition to excellent scholarship during his first two years, those fine qualities of character and conscientious devotion to duty manifested by Dean Rees during his lifetime. Dr. Rees, who died May 25, 1945, joined the Colorado faculty in 1921 as professor of physiology and pharmacology, becoming dean in 1925.

ILLINOIS

Seminars on Health Questions.—A series of community relations seminars on health questions, sponsored by the University of Illinois extension service in agriculture and home economics in cooperation with the Illinois state department of public health and the office of state superintendent of public instruction, have been held in seven Illinois cities during January. Meetings were held in Dixon, Pontiac, Springfield, Urbana, Effingham, Benton and Highland. Speakers included Dr. Richard F. Boyd, Springfield, chief of the division of local health administration, state health department.

Chicago

Charles Huggins Goes to Baltimore.—Dr. Charles B. Huggins, professor of surgery (urology) and head of the department of urology, University of Chicago School of Medicine, has been named director of the Brady Urological Institute and professor and head of the department of urology at Johns Hopkins University School of Medicine, Baltimore. The appointment will be effective July 1. The appointment fills the vacancy that occurred when Dr. Hugh H. Young, founder of the Brady institute, died on Aug. 23, 1945. Dr. Huggins, who has been affiliated with the university since 1927, has been professor of urologic surgery at Chicago since 1936. Prior to that he had been associated with the University of Michigan Medical School as instructor in surgery. He graduated at Harvard Medical School, Boston, in 1924.

LOUISIANA

Estrogenic Hormone Creams Forbidden in Louisiana.—The Louisiana State Board of Health on January 11 issued the following order:

> The manufacture, processing, packing, sale or distribution of any cosmetic or beauty preparation containing estrogenic hormone, any of its chemical derivatives or any synthetic chemical product possessing properties similar to estrogenic hormone is hereby prohibited in Louisiana.

Dr. David E. Brown, state health officer, announced that, beginning March 1, action will be taken against all cosmetic preparations containing estrogenic hormone, any of its chemical derivatives or any synthetic chemical product possessing properties similar to estrogenic hormone that are being offered for sale or distribution in Louisiana. The announcement suggests that any one offering for sale or distribution such a product immediately withdraw it from the market in Louisiana.

MARYLAND

Warfield Longcope to Retire.—Dr. Warfield T. Longcope, since 1922 professor of medicine at Johns Hopkins University School of Medicine, Baltimore, will retire June 30, ending twenty-four years' affiliation with the institution. Dr. A. McGehee Harvey, assistant professor of medicine, Vanderbilt University School of Medicine, on leave for service in the army, has been named to succeed Dr. Longcope. Dr. Harvey graduated at Johns Hopkins in 1934.

NEW HAMPSHIRE

John Wheeler New State Health Officer.—Dr. John S. Wheeler, released December 1 from the army with the rank of major, has been appointed state health officer of New Hampshire. He succeeds Dr. Alfred L. Frechette, Concord (THE JOURNAL, Dec. 8, 1945, p. 1036). Dr. Wheeler in 1937 was director of epidemiology and local health in the New Hampshire Department of Public Health. In 1940 he entered the Army of the United States and was stationed in New Hampshire on an assignment with Selective Service. His recent service has been in the Philippines. He graduated at the Boston University School of Medicine in 1930. Dr. Mary M. Atchison, acting deputy health officer in the department, has been appointed deputy health officer.

NEW YORK

Howard T. Ricketts Memorial.—A scrap book exhibiting the research of Dr. Howard T. Ricketts has been presented to the Rochester Academy of Medicine by Mrs. Howard T. Ricketts, Chicago. The book is a photo copy of one shown in a special exhibit at the academy during the dedication of its museum Nov. 16, 1941. In recognition of the gift, Mrs. Ricketts has been made honorary member of the academy.

John Romano Named Professor of Psychiatry.—Dr. John Romano, recently consultant in psychiatry, Army of the United States, European Theater of Operations, and professor of the department of psychiatry and director of service, University of Cincinnati School of Medicine, has been appointed professor of psychiatry at the University of Rochester School of Medicine and Dentistry. He will also be in charge of the new psychiatry clinic to be built in 1946 adjacent to the school's Strong Memorial Hospital. While the new appointment will be effective June 1, Dr. Romano in the interim will visit Rochester periodically to help in the clinic and the staff organization. The cost of the building is estimated at approximately $600,000, and the building cost and an endowment fund of $2,154,000 were given to the school of medicine and dentistry by Mrs. Helen W. Rivas of LeRoy (THE JOURNAL, Nov. 17, 1945, p. 819).

New York City

Medicine's Tomorrow.—An annual symposium on the state of the nation's health, under the title of "Medicine's Tomorrow," was held at the Waldorf-Astoria Hotel January 22 under the sponsorship of the Council of New York University and the faculty of New York University College of Medicine. The speakers were:

Dr. Alfred N. Richards, Philadelphia, The Impact of the War on Medicine.
Dr. Dean A. Clark, New York, Health—the People's Business.
Dr. Alan Gregg, New York, The Mission of a Medical School.

Economics and Medicine.—Dr. Dean A. Clark, Washington, senior surgeon, U. S. Public Health Service, on leave, spoke at a public meeting, January 24, at the New York Academy of Medicine, on "Economics and Medicine." Dr. Clark presented alternative and multiple solutions to the problem of medical costs today when scientific developments have complicated the economics of medicine. He also discussed the economic factors of medical service, the economic position of patients and of physicians, the inadequacy of customary methods of payment, group medical practice, preventive medicine, types of prepayment and the need for joint action on the part of the public and physicians.

Examination for School Psychiatrist.—The board of examiners of the city board of education announced that examinations for the license of school psychiatrist will be given in March. The salary starts at $6,000 and goes to $7,000 in three years. The general requirements are: Age: 30 to 45 years; graduation from an approved medical college and either (*a*) five years of practice in psychiatry including 800 hours in an approved mental institution and 1,200 hours in an approved child guidance clinic or (*b*) three years of practice in psychiatry, including 1,200 hours in an approved mental institution and 1,200 hours in an approved child guidance clinic. Further information about these requirements and the examinations will be obtained with the application. The final date for filing applications is February 25. Application forms may be obtained in person or by writing to Board of Examiners, room 437, Board of Education, 110 Livingston Street, Brooklyn 2. The written request must be accompanied by a large self-addressed envelop bearing 6 cents in stamps.

living dogs was introduced in the New York State Senate by Senator Richard A. DiCostanzo, Republican of New York,

for space may be obtained from the Director, Scientific Exhibit, 535 North Dearborn Street, Chicago 10.

PENNSYLVANIA

Philadelphia

Gimbel Award Goes to Florence Seibert.—Florence B. Seibert, Ph.D., assistant professor of biochemistry, University of Pennsylvania School of Medicine, on January 3 was presented the $1,000 Gimbel Philadelphia Award for 1945. Dr. Seibert was given the award for her research on tuberculin.

Personal.—Dr. Thomas A. Shallow has been appointed a member of the board of health of Philadelphia and Dr. Nathan Ralph has been appointed medical director of the Country Branch of Rush Hospital for Consumption and Allied Diseases. Both appointments were to fill vacancies that occurred with the death of Dr. John D. McLean.

Charles Zeller Goes to Michigan.—Dr. Charles A. Zeller, superintendent of the Philadelphia State Hospital, has accepted the appointment as director of the Michigan Department of Mental Health, effective March 1. Dr. Zeller graduated at the University of Buffalo School of Medicine in 1927. The Michigan Department of Health, of which Dr. Charles F. Wagg has been acting executive officer, was set up by the 1945 legislature (THE JOURNAL, Nov. 17, 1945, p. 818).

Activities at Woman's Medical College.—Dr. Margaret C. Craighill, dean of the Woman's Medical College of Pennsylvania, has returned from two and a half years of military service. Dr. Craighill, the first woman ever to be commissioned as an officer in the army, has been appointed consultant for the medical care of woman veterans, the first position of its kind in the Veterans Administration. In Dr. Craighill's absence Dr. Marion S. Fay, professor of physiologic chemistry, served the college as acting dean. At the ninety-fourth annual commencement of the college on January 10 two members of the class of 1896 were present to receive a fifty year medal awarded by the Alumnae Association to members of the class, of which there are eleven living members. Dr. Anton J. Carlson, emeritus professor of physiology, University of Chicago School of Medicine, delivered the commencement address, on "The Endless Frontiers in Medicine."

SOUTH DAKOTA

Medical School Adopts Four Year Curriculum.—The first junior students will be admitted to the University of South Dakota School of Medical Sciences, Vermillion, in the spring and the present sophomore class will be the first to continue training at the university, according to the *Journal Lancet*. The expansion of the two year school to a four year curriculum was authorized by the 1945 legislature. Detailed plans for the junior and senior years are being arranged by Dr. Joseph C. Ohlmacher, dean of the medical school, and Edwin H. Shaw, Ph.D., professor of biochemistry, in cooperation with physicians in private practice. Dr. Ralph L. Ferguson, formerly senior pathologist at Edgewood Arsenal, Md., has joined the faculty as professor of pathology and will assist in the organization of the four year course. The Sioux Valley and McKennan hospitals at Sioux Falls will be utilized for the junior year clinical work. The senior year will be organized on a preceptor basis, other hospitals in the state being utilized. The state institutions at Yankton and Sanator will also cooperate in the program.

TENNESSEE

Harrison Shoulders Honored.—The Nashville Academy of Medicine and the Davidson County Medical Society will honor Dr. Harrison H. Shoulders, Nashville, President-Elect, American Medical Association, at a dinner in the Maxwell House Dining Room February 1. Dr. John O. Manier, Nashville, will be the toastmaster and Roger T. Nooe, pastor of the Vine Street Christian Church, Nashville, will deliver the invocation. The speakers will include:

Dr. William C. Chaney Memphis, Greetings from the Tennessee State Medical Association.
Dr. Ernest R. Zemp, Knoxville, The Services of Dr. Shoulders to Tennessee Medicine.
Dr. Barney Brooks, Nashville, Greetings from Vanderbilt University Medical School.
Dr. Elmer L. Henderson, Louisville, Plans Proposed by American Medicine for Distributing the Cost of Medical Care on a Voluntary Basis.
Dr. Ernest E. Irons, Chicago, Socialized Medicine from a Historical Point of View.
Dr. Irvin Abell, Louisville, Legislative Proposals and Their Threat to Quality Medical Care.
Dr. Olin West, Chicago, The American Medical Association: Its Organization and Purposes.

TEXAS

The Hite Fellowships in Science.—The board of regents of the University of Texas has established four postdoctoral and ten predoctoral fellowships in the fields of science relating to cancer. In June 1944 Miss Rosalie B. Hite, Houston, bequeathed to the University of Texas the bulk of her estate with instructions that the income be used in researches into the cause, prevention, treatment and cure of cancer. The new fellowships are the result. Known as the Rosalie B. Hite Fellowships, they are to be awarded to properly qualified persons who have a doctoral degree (or the equivalent in training) and who wish to do or to continue research work which can qualify under a liberal interpretation of the terms of the bequest, or graduate students who desire to fit themselves to do research in fields which will contribute to the fundamental knowledge of normal and abnormal cells. It is the belief of the board that one of the great needs in cancer research today is a clearer understanding of how normal cells function, for without this knowledge workers in cancer research are greatly handicapped in their efforts to comprehend the cause, or causes, of abnormal behavior. With this point of view in mind, preference will be given to persons who desire training in the borderline fields of biology and the physical sciences, such as cytochemistry, biophysics, enzyme and protein chemistry and related biochemical fields. To be eligible for postdoctoral fellowships, a person must have a doctor's degree (or the equivalent in training) and have demonstrated competence in research. A stipend of $2,400 per calendar year (including a vacation of six weeks) is given in such cases. The holders of these fellowships will not be required to pay fees to the university. Research work may be carried on at the main university at Austin, at the M. D. Anderson Cancer Research Hospital at Houston or at the school of medicine at Galveston, depending on which branch of the university best serves the interests of the investigator as approved by the committee of award. An applicant for a predoctoral fellowship must have graduated with high scholastic standing from an institution of higher learning and must have had thorough training in the fundamentals of biology and chemistry so that he can profitably begin work at once in one or both of these fields at the graduate level. The stipend of the predoctoral fellowships will be $100 per month net; that is, the university will pay all fees. In case a person desires to continue work for an entire calendar year, a vacation of six weeks with pay will be allowed. While the award of these predoctoral fellowships is on an annual basis, it is desired that the holder who demonstrates satisfactory progress will be allowed a reasonable time in which to receive his doctor's degree. It is obligatory that the thesis problem come within a liberal interpretation of the terms of the Hite bequest. Applicants should write for blanks and further information by February 1. All applications must be received in final form by March 1. The committee of award will make selections by April 1, and applicants will have until April 15 for acceptance. All inquiries should be addressed to the Dean of the Graduate School, University of Texas, Austin 12, Texas.

GENERAL

Urologic Award.—The American Urological Association offers an annual award, not to exceed $500, for an essay (or essays) on the result of some specific clinical or laboratory research in urology. The amount of the prize is based on the merits of the work presented, and, if the committee on scientific research deems none of the offerings worthy, no award will be made. Competitors will be limited to residents in urology in recognized hospitals and to urologists who have been in such specific practice for not more than five years. All interested should write the secretary for full particulars. The selected essay (or essays) will appear on the program of the meeting of the American Urological Association to be held at the Netherland Plaza, Cincinnati, July 22-25. Essays must be in the hands of the secretary, Dr. Thomas D. Moore, 899 Madison Avenue, Memphis, on or before July 1.

Research Medal Goes to Tinsley Harrison.—The Research Medal of the Southern Medical Association was presented to Dr. Tinsley R. Harrison, professor of internal medicine, chairman of the department, and dean, Southwestern Medical College, Dallas, during the thirty-ninth annual meeting of the Southern Medical Association in Cincinnati, November 12-15. The award went to Dr. Harrison "in recognition of his outstanding contributions toward the elucidation of structural and functional aspects of cardiovascular disease and particularly of practical problems arising from failure of the

ending twenty-four years' affiliation with the institution. Dr. A. McGehee Harvey, assistant professor of medicine, Vanderlyn 2. The written request must be accompanied by a large self-addressed envelop bearing 6 cents in stamps.

circulation." Dr. Elmer L. Henderson, Louisville, was chosen president-elect of the Southern Medical Association and Dr. Marye Y. Dabney, Birmingham, Ala., was installed as president. Vice presidents are Dr. Lucien A. LeDoux, New Orleans, and Dr. Oscar W. Frickman, Newport, Ky. Mr. C. P. Loranz, Birmingham, Ala., is secretary-manager.

Conference on Medical Service.—The nineteenth annual meeting of the National Conference on Medical Service will be held at the Palmer House, Chicago, February 10, under the presidency of Dr. Chauncey L. Palmer, Pittsburgh, who will discuss "Medicine and the National Crisis." Other speakers on the program will include:

Mr. J. S. Jones, St. Paul, What the Farmer Expects from Medicine.
Mr. Howard Strong, Washington, D. C., What Industry Expects from Medicine.
Major Gen. Paul R. Hawley, Washington, Medical Care of Veterans.
Dr. Andrew S. Brunk, Detroit, Aims and Purposes of Conference of Presidents and Other Officers of State Medical Societies.
Dr. Victor S. Johnson, Chicago, What About Returning Medical Officers? Postgraduate Opportunities.
Mrs. M. Virginia Shuler, Chicago, Establishment of State Bureaus of Information.
Mr. J. W. Holloway Jr., Chicago, Medical Legislation.
Mr. Jay C. Ketchum, Detroit, National Plan for Volunteer Prepayment Medical Care.

International Congress on Mental Deficiency.—At the sixty-ninth annual meeting of the American Association on Mental Deficiency in Cleveland, November 28-December 1, it was decided to hold the first International Congress on Mental Deficiency in Boston in 1948, probably in May or June. The congress would observe the one hundredth anniversary of the establishment in Massachusetts in 1848 of the first American school for the mentally subnormal. Two were founded in the same year, one at Barre, a private school, and one at South Boston, the first state school. The latter has since moved to Waverly and is known as the Walter E. Fernald State School. The chairman of the international congress is Dr. Charles Stanley Raymond, superintendent of the Wrentham State School, Wrentham, Mass. Officers of the American Association on Mental Deficiency chosen at the recent meeting are Dr. Warren G. Murray, Dixon, Ill., president-elect; Miss Mabel Matthews, Hartford, Conn., president, and Dr. Neil A. Dayton, Mansfield Depot, Conn., secretary-treasurer. Future meetings of the association are to be at Montreal, October 2-5, St. Paul in 1947 and Boston in 1948.

Didactic Course for Ophthalmologists.—The Ophthalmological Study Council was organized at a meeting in Boston January 5 to furnish a course for ophthalmologists returning from military service, to be given at the Boston Medical Library. The course will be designed for those wishing to practice the specialty of ophthalmology but who cannot secure instruction to meet the requirements of the American Board of Ophthalmology at any of the existing institutions because present facilities are wholly inadequate. The program is not intended to supplant the existing university courses but to meet an emergency. The following is a condensed outline of the subjects to be covered:

April 1–May 1—Anatomy, Histology, Embryology, Heredity, Bacteriology, Pharmacology, Physiology, Sensory Neuro-Ophthalmology, Perimetry. In the evening, Optics, Physiologic Optics from a practical point of view including Image Formation, Aberrations, Accommodation, Astigmatism and Errors of Refraction.

May 1-June 1—Pathology, Bio-chemistry, Physiology, Light Sense, Color Sense, Form Sense, Allergy. In the evening, Motor Neuro-Ophthalmology, Ocular Motility, Normal and Abnormal, Strabismus of all kinds, Binocular Vision, Space Perception, Orthoptics.

An adequate faculty is assured. Applicants must have acceptable medical training and ethical standing (membership in county medical society). The number will not be limited. This is not a laboratory or clinical course. Instruction is by lectures, required reading, quizzes and seminars and is preparatory to and in addition to the necessary clinical training in residency or preceptorship. Applications should be made to the Ophthalmological Study Council, 520 Commonwealth Avenue, Boston 15, Mass. Mention should be made of premedical and complete medical training with dates; also military service, if any, and whether or not a candidate for the American Board of Ophthalmology. The new council has the following executive officers: Drs. Walter B. Lancaster, Hanover, N. H., Theodore L. Terry, Boston, S. Judd Beach, Portland, Maine, from whose suggestion the council stemmed, and Trygve Gundersen, Brookline, Mass. This new type of course is patterned after one conducted in Oxford by Dr. Ida Mann, head of the new Ophthalmologic Institute there and the first woman to be given the title of professor at Oxford.

Commonwealth Fund Fellowships to General Practitioners.—The Commonwealth Fund has announced the conditions governing its postgraduate fellowships offered to general practitioners during 1946. Fellowship aid is to be limited to honorably discharged physicians who have seen service for six months or longer, since 1940, in the armed forces of the United States and who plan to take up residence and to practice in a community having a population of 25,000 or less situated in Mississippi, Oklahoma or Tennessee. Physicians who qualify may be considered for a fellowship which provides postgraduate study for one to four months at an approved institution. The course or courses of study shall be subject to approval by the fund and may include general medicine and diagnosis, pediatrics, obstetrics, medical gynecology or minor surgery, or combinations of two or more of these subjects. The fund is not to assume responsibility for the registration of a fellow in a particular course; this arrangement must be made by the individual with the institution where the work is offered. Courses are to be taken in continuous term and are not to depart from the approved schedule without special authorization. The applicant must be a graduate of a reputable medical school and have completed a satisfactory internship. He must furnish a record of a recent physical examination, and a personal interview with a member of the fund staff may be required. The rate of the fellowship is to be uniform at $100 a month for the duration of the award, one to four months. Applications for fellowship are to be made on forms furnished by the Commonwealth Fund, Division of Public Health, 41 East 57th Street, New York 22.

Research Foundation Enters Consent Decree on Vitamin Suit.—Attorney General Tom C. Clark announced the entry in the United States District Court at Chicago of a consent judgment terminating a civil antitrust suit against the Wisconsin Alumni Research Foundation and seventeen other firms. As part of the settlement of this case the Attorney General stated that the vitamin D patents owned by the Wisconsin Alumni Research Foundation have been dedicated to the public. The government's suit, filed on Oct. 20, 1944, charged the Wisconsin Alumni Research Foundation and seventeen of its so-called licensees in the chemical, drug, packaged foods and evaporated milk fields with unlawfully conspiring to restrain and monopolize trade and commerce in vitamin D and vitamin D products in violation of the Sherman Antitrust Act. The court's decree was entered with the consent of the Department of Justice and the defendant Wisconsin Alumni Research Foundation. It enjoins the foundation from instituting suits for infringement or to collect royalties based on any of the patents dedicated to the public and also enjoins the foundation from entering into any future licensing of patents relating to vitamin D which provide for price fixing or impose restrictions on the manufacture, use or sale of vitamin D or vitamin D products. In addition to dedication to the public of the vitamin D patents, the foundation has canceled the restrictive patent agreement which the government had attacked in its complaint. Among the patents dedicated to the public are those obtained by Harry Steenbock, Ph.D., professor of biochemistry at the University of Wisconsin, Madison, on the manufacture and use of vitamin D, the so-called "sunshine vitamin," which prevents and cures rickets. Wendell Berge, assistant attorney general in charge of the antitrust division, in discussing the allegation in the government's complaint said: The complaint charged that arbitrary and unreasonable prices of pharmaceutical vitamin D products had been maintained so that persons who most needed vitamin D to prevent and cure rickets were unable to obtain it. In this connection it stated that for at least seven years prior to 1944 the cost of manufacturing vitamin D was less than $0.15 per million units but that the five pharmaceutical manufacturers who were involved had sold the product to wholesalers at prices between $2.65 and $7.70 per million units and the public was charged between $3.35 and $10.80 per million units for the same product. It also charged that the conspiracy resulted in a limitation of the potency of vitamin D food products in order to prevent them from competing with vitamin D pharmaceutical products, with the result that the normal consumption of a vitamin D food product would not cure, although it might prevent rickets. The government has recommended to the court that the suit be dismissed as to those defendants who have canceled their restrictive agreements with the foundation. Those defendants are:

E. I. du Pont de Nemours and Company
The Quaker Oats Company
Standard Brands Incorporated
Gelatin Products Corporation
The Borden Company
Carnation Company
Pet Milk Company
Indiana Condensed Milk Company
Nestle's Milk Products, Inc.
Vitamins, Inc.
Abbott Laboratories
Mead Johnson and Company
The William S. Merrell Company
Parke, Davis and Company
E. R. Squibb and Sons
Winthrop Chemical Company, Inc.
Charles Bowman

Deaths

Don Welsh Gudakunst ✦ White Plains, N. Y., medical director of the National Foundation for Infantile Paralysis, died suddenly in Chicago, January 20, aged 51.

Dr. Gudakunst was born in Paulding, Ohio, Aug. 18, 1894. He studied in Toledo and Somerville, Mass., graduating at the University of Michigan School of Medicine, Ann Arbor, in 1919. After internship at the University Hospital in Ann Arbor Dr. Gudakunst became industrial physician for the Solway Process Company, Detroit, in 1920, and health officer of Chaves County in Roswell, N. M., the following year. In 1924 he returned to Detroit, where he served as director of the school health service of the city health department until 1937 and as deputy health commissioner from 1932 to 1937. The following year he became commissioner of the Michigan State Department of Health. During this period Dr. Gudakunst was also professor of public health and preventive medicine at Wayne University School of Medicine, Detroit. At one time he was a senior surgeon (R), U. S. Public Health Service.

Since his appointment as medical director, Jan. 1, 1940, Dr. Gudakunst had worked indefatigably in the development of the National Foundation for Infantile Paralysis. He was an Associate Fellow of the American Medical Association and a member of numerous scientific groups. He had also written extensively on many medical topics, and particularly on infantile paralysis.

Stanley Rogers Woodruff ✦ Bayonne, N. J.; Yale University School of Medicine, New Haven, 1897; born in Orange, Conn., in 1875; specialist certified by the American Board of Urology, Inc.; clinical professor of urology at the New York Polyclinic Medical School and Hospital, New York; member of the American Urological Association; fellow of the American College of Surgeons; past president of the board of education; chairman, Section on Urology of the American Medical Association, 1934-1935; attending genitourinary surgeon, Bayonne (N. J.) Hospital and Christ Hospital, Jersey City; consulting urologist at the following hospitals: Greenville, Jersey City; St. Mary's, Hoboken; Hackensack, Hackensack; Elizabeth A. Horton Memorial, Middletown, N. Y., and St. Vincent's, Staten Island, N. Y.; died October 13, aged 70, of bronchopneumonia and carcinoma of the prostate.

Theodore John Dimitry ✦ New Orleans; Medical Department of Tulane University of Louisiana, New Orleans, 1901; professor of ophthalmology and director of the department at the Louisiana State University School of Medicine; served as a lecturer on special anatomy at the Loyola University and vice president and professor of ophthalmology at the Loyola Post-Graduate School of Medicine; specialist certified by the American Board of Ophthalmology; fellow of the American College of Surgeons; a regent of the International College of Surgeons; served on the staffs of the Charity Hospital, New Orleans Hospital and Dispensary for Women and Children, De Paul Sanitarium, Hotel Dieu and the Mercy Hospital-Soniat Memorial; died in the Baptist Hospital October 27, aged 66, of coronary thrombosis.

Harry Hedgewick Drysdale ✦ Cleveland; University of Wooster Medical Department, Cleveland, 1901; specialist certified by the American Board of Psychiatry and Neurology, Inc.; member of the American Psychiatric Association and the Cleveland Academy of Medicine; veteran of the Spanish-American War; a consulting member of the medical advisory board during World War I and medical examiner for the induction board during World War II; served with the U. S. Public Health Service; consultant in neuropsychiatry, St. Vincent Charity Hospital; at one time assistant superintendent of the Massillon (Ohio) State Hospital; died October 5, aged 69, of cardiac asthma.

John Gaskin Dunlop ✦ Los Angeles; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1929; member of the American Society of Anesthetists, of which he had served as assistant secretary; formerly assistant professor of anesthesia at the College of Medical Evangelists; a fellow in anesthesia of the Mayo Foundation in Rochester, Minn., from May 14, 1931 to Sept. 15, 1934; interned at the Orange Memorial Hospital in Orange, N. J.; a member of the staff and in 1944 resigned as secretary of executive staff, Hospital of the Good Samaritan; died October 15, aged 42, of rheumatic heart disease.

Fredric Lewis, Stamford, Conn.; Long Island College of Medicine, Brooklyn, 1936; served an internship and residency at the Harlem Hospital in New York, where he also served an internship at the French Hospital; began active duty as a first lieutenant in the medical corps, Army of the United States, on May 30, 1941; promoted to captain; served as flight surgeon with the Sixth Air Force in Panama; relieved from active duty June 8, 1944; on the staffs of the Stamford and St. Joseph hospitals; died in the Mount Sinai Hospital, New York, October 4, aged 36, of carcinoma.

Roland Orlando Bagby, Kansas City, Mo.; Kansas City College of Medicine and Surgery, 1920; member of the American Medical Association; died in the Research Hospital October 10, aged 59, of brain abscess.

Miles John Breuer ✦ Los Angeles; Rush Medical College, Chicago, 1915; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians and the American Society of Clinical Pathologists; member of the American Heart Association and National Tuberculosis Association; served during World War I; at one time on the staffs of the Bryan Memorial, Lincoln General and St. Elizabeth hospitals all in Lincoln, Neb.; died in the National Military Home October 14, aged 56, of uremia.

Otto Budde, Chicago; Northwestern University Medical School, Chicago, 1895; died October 24, aged 81, of heart block and arteriosclerosis.

James Tweedie Campbell, Chicago; University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1889; Bellevue Hospital Medical College, New York, 1889, and member of the Royal College of Surgeons of England, 1890; formerly professor of laryngology, rhinology and otology at the Post-Graduate Medical School and Hospital; senior attending rhinologist, otologist and laryngologist at St. Luke's Hospital, where he had been a member of the staff since 1907; died October 26, aged 79, of diabetes mellitus.

James Francis Carty Jr., New York; University of Pennsylvania School of Medicine, Philadelphia, 1942; interned at St. Francis Hospital in Hartford, Conn.; served a residency at the Memorial Hospital, where he died September 24, aged 29, of lymphosarcoma.

Mortimer Thomas Cavanaugh ✦ Great Barrington, Mass.; Baltimore Medical College, 1898; served during World War I; for many years a member and chairman of the board of health, and school committee; medical examiner for the Great Barrington district; chief of staff, Fairview Hospital; died October 7, aged 73, of coronary occlusion.

Howard L. Clarke ✦ La Cygne, Kan.; Kansas City (Mo.) Medical College, 1898; died in the Lawrence Memorial Hospital, Lawrence, October 19, aged 76, of carcinoma of the descending colon.

Albert Woods Dumas Sr., Natchez, Miss.; Illinois Medical College, Chicago, 1900; past president of the National Medical Association and member of advisory board to editorial staff of its journal; member of the advisory committee on child and maternal welfare, Children's Bureau; died October 1, aged 69, of cerebral hemorrhage.

Robert Franklin Elrod, Fort Payne, Ala.; Chattanooga (Tenn.) Medical College, 1905; acted as county health officer; member of the American Medical Association; died October 18, aged 63, of coronary thrombosis.

Frederick Gochnauer, Upperville, Va.; University College of Medicine, Richmond, 1903; member of the American Medical Association; member of the county board of health; on the staff of the Winchester Memorial Hospital in Winchester, where he died October 9, aged 66, of coronary thrombosis following an operation.

Frank Branch Gooch ✦ Houston, Texas; Tulane University of Louisiana School of Medicine, New Orleans, 1916; served during World War I; on the visiting staffs of the Methodist and Memorial hospitals and St. Joseph's Infirmary; died October 8, aged 57, of coronary occlusion.

Herbert Collins Hanning ✦ Dayton, Ohio; College of Physicians and Surgeons, Baltimore, 1894; past president of the Montgomery County Medical Society; member of the House of Delegates of the American Medical Association in 1912 and 1913 and from 1915 through 1918; at one time a member of the city board of health; died October 17, aged 77, of ruptured gallbladder.

Everett Arnold Land ✦ Norfolk, Va.; University College of Medicine, Richmond, 1906; fellow of the American College of Surgeons; member of the Selective Service Board; on the staffs of the Leigh Memorial and Norwalk General hospitals; died October 30, aged 65, of heart disease.

Philip Le Sage, Joliet, Ill.; Chicago Medical College, 1890; in 1941 honored at a meeting of the Will-Grundy Counties Medical Association and presented with a fifty year medal and diploma commemorating his half a century in

the profession; on the staffs of St. Joseph's and Silver Cross hospitals; died September 24, aged 79, of arteriosclerosis.

Stephen C. Lewis, St. Petersburg, Fla.; University of Pennsylvania Department of Medicine, Philadelphia, 1900; for many years a medical missionary in China; died in Grove City, Pa., October 21, aged 76, of adenocarcinoma of the liver.

Joseph O'Connell, Oconomowoc, Wis.; Rush Medical College, Chicago, 1903; on the staff of St. Mary's Hospital in Watertown; died September 27, aged 73.

Aaron H. Rabinovitz ✠ Brooklyn; Long Island College Hospital, Brooklyn, 1914; died in the Jewish Hospital September 6, aged 71, of cerebrovascular disease.

Anthony John Schneider ✠ Indianapolis; Medical College of Indiana, Indianapolis, 1898; on the staff of St. Francis Hospital; died October 9, aged 70, of injuries received when the automobile in which he was driving was struck by a train.

Orlando J. Shank, Windber, Pa.; Baltimore Medical College, 1896; surgeon for the Pennsylvania Railroad; member of the American Medical Association; served as postmaster, president of the board of health and school examiner; died September 23, aged 76, of coronary occlusion.

Herman Cecil Smith, Liberty, Texas; State University of Iowa College of Medicine, Iowa City, 1896; died in September, aged 78.

Mansfield Leonidus Spears ✠ Pontiac, Mich.; Meharry Medical College, Nashville, Tenn., 1917; died in St. Joseph Mercy Hospital September 16, aged 55.

Homer Sylvanus Stallings ✠ Troy, Ala.; Atlanta College of Physicians and Surgeons, 1902; died in the Edge Hospital September 19, aged 70, of cerebral hemorrhage.

John H. Terhorst, Milwaukee; Northwestern University Medical School, Chicago, 1894; died September 20, aged 76, of coronary arteriosclerosis.

Austin Hulbert Thomas, Ironwood, Mich.; Rush Medical College, Chicago, 1883; served as physician to Newport Mining Company; died in Winneconne, Wis., September 7, aged 90, of arteriosclerotic heart disease.

William Remsen Varick, Santa Barbara, Calif.; Columbia University College of Physicians and Surgeons, New York, 1895; for four years a member of the Selective Service Board; member of the board of directors of the Cottage Hospital; died November 9, aged 74, of carcinoma.

MAJOR WILLIAM HART HOUSTON JR.
M. C., A. U. S., 1911-1944

CAPT. ROBERT BARNES WARE
M. C., A. U. S., 1914-1944

LT. COMDR. CLYDE LIONEL WELSH
(MC), U.S.N.R., 1899-1944

Irvin W. Shollenberger, Reading, Pa.; Baltimore Medical College, 1901; formerly on the staff of the Reading Hospital; died September 15, aged 69, of injuries received in an automobile accident.

Allen Alfred Yoder, Akron, Ohio; Medico-Chirurgical College of Philadelphia, 1898; died in the Akron City Hospital November 13, aged 75, of ruptured abdominal aneurysm and arteriosclerosis.

KILLED IN ACTION

William Hart Houston Jr., Palo Alto, Calif.; St. Louis University School of Medicine, 1937; interned at San Francisco Hospital; served a residency at the University Hospital in Ann Arbor, Mich.; entered the medical reserve corps of the U. S. Army as a first lieutenant on June 1, 1937; began active duty in the same rank in the medical corps, Army of the United States, on Feb. 3, 1941; promoted to captain and major; had been overseas with the paratroopers since April 1943, engaging in the Sicily and Italy campaigns; awarded the Legion of Honor posthumously "for exceptionally meritorious conduct in the performance of outstanding services as commanding officer of an airborne medical company, 82d Airborne Division, from August 15, 1942 to June 6, 1944"; killed in action in France June 6, 1944, aged 33.

Robert Barnes Ware, Lynchburg, Va.; Medical College of Virginia, Richmond, 1940; interned at the Lynchburg General Hospital; called to active duty as a first lieutenant in the medical reserve corps of the U. S. Army on July 1, 1940; assigned to duty at Fort George G. Meade, Md.; promoted to captain in the medical corps, Army of the United States; had been overseas since Sept. 27, 1942; killed in action in France June 6, 1944, aged 29.

Clyde Lionel Welsh, Seattle; Tulane University of Louisiana School of Medicine, New Orleans, 1928; member of the American Medical Association and the Pacific Coast Oto-Ophthalmological Society; interned at the Ancker Hospital in St. Paul; served as resident physician at the Bismarck Hospital and Deaconess Home in Bismarck, N. D., and the University of California Hospital, San Francisco; began active duty as a lieutenant commander, medical corps, U. S. Naval Reserve, on Nov. 1, 1940; assigned to Eye, Ear, Nose and Throat Department at the U. S. Naval Hospital, Canacao, P. I.; taken prisoner by the Japanese on Jan. 1, 1942 and remained in Bilibid Prison as chief of medicine until Dec. 12, 1944; killed at Tacao, Formosa, Dec. 15, 1944, aged 45, by a direct bomb hit while being transferred to Japan on a Japanese prison ship.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec. 22, 1945.

Vital Statistics for the Last Year of the War

The annual summary report of the Ministry of Health for the year ended March 31, 1945 has just been published. It confirms previous reports of improved vital statistics during the war. The death rates of women in childbirth, babies in the first month of life and children up to 5 years of age were the lowest ever recorded in England and Wales, as were the death rates of tuberculosis, diphtheria, typhoid and the standardized death rates for men and women. The birth rate reached 18 per thousand of population for the first time in nineteen years. The infant mortality was 46 per thousand live births, 3 less than the record low figure for 1943. The neonatal mortality rate was 24.5, the lowest ever recorded, being 0.7 below that of 1943 and 3.8 below the rate in 1938 and 1939. The death rate of the civilian population was 9.42 for males and 6.63 for females, the lowest ever recorded. The previous low record was 9.53 and 6.84 respectively in 1942. The maternal mortality rate, including deaths from abortion, declined to 1.95 per thousand births. The deaths from all forms of tuberculosis numbered 24,163, the lowest ever recorded. The usual wartime increase in the number of cases of tuberculosis took place in 1942 and 1943 but was checked in 1944. The number of persons examined by mass radiography up to March 1945 was over 400,000. About 4,000 were found to have tuberculosis or were suspected cases. For the third successive year there was a substantial decrease in the notifications of and deaths from diphtheria; 29,949 were notified, and 934 persons died, less than a third of the average for the prewar decade. The decrease, which has been continuous since 1941, must be credited to immunization. During the year over half a million children were immunized, but this is still not satisfactory, since this number is only a little over half the births of the previous year.

The Problem of Rickets

Rickets is no longer a common disease in Britain, because of improved methods of feeding. A special inquiry by the British Pediatric Society, by arrangement with the Ministry of Health, showed, however, that wartime conditions had produced some increase of the disease. Owing to the lack of sunshine in this country, the deficiency of vitamin D is a nutritional problem. Because of the mild form in which rickets now occurs, the diagnosis is extremely difficult. When there are only minor bone signs clinical diagnosis may be impossible. Radiology is then of great help, and in doubtful cases it should be supplemented by determination of the blood phosphatase. For prevention and treatment the memorandum gives specific instructions. In order to prevent rickets it is recommended that babies, however fed, should receive a supplement of vitamin D in daily doses of 500 to 800 international units, given in the form of cod liver oil. For the treatment of active rickets ultraviolet irradiation should be combined with larger doses of vitamin D than those recommended for prophylaxis.

The Stethoscope versus the X-Rays

At the Section of Medicine of the Royal Society of Medicine there was an important discussion by physicians and radiologists on the use of the stethoscope and x-rays. Dr. James Maxwell remarked that many doctors falsely assumed that if pathologic physical signs were not detected in the chest there was nothing wrong. The absence of these signs does not exclude tuberculosis or early bronchial carcinoma, both curable if detected before physical signs are present. Students should be taught the x-ray appearance of the normal chest and its variations. Often the x-ray film will reveal a lesion which physical examination will miss, and sometimes the converse will be true. A practitioner who does not insist on x-ray examination of a suspected chest, especially after hemoptysis, might be sued for negligence.

Dr. Peter Kerley believes that the stethoscope has limited uses so that radiography should be considered indispensable. Views in three directions and tomography are essential for a proper interpretation. However, the stethoscope is superior in the diagnosis of heart conditions. Contrast mediums for angiography will soon be made completely safe, and then radiologists will be able to demonstrate chambers of the heart and the pulmonary circulation.

Dr. Geoffrey Marshall felt that there was no reason for discarding either instrument but he considered the x-rays more valuable. The stethoscope was important as an adjunct to radiography.

In the discussion there was general agreement between physicians and radiologists that the stethoscope is valueless in the majority of cases of early pulmonary disease. Many thought that too much emphasis was still placed on obsolete stethoscopic signs. Potential advances in chest radiography may soon lead to large condenser discharge machines with focal spot measures in fractions of a millimeter, so that not only great increase in detail but double and quadruple magnification of suspected areas may be obtained.

PARIS

(From Our Regular Correspondent)

Dec. 8, 1945.

Frequency of Cancer in France

In an article recently published in the *Archives de médecine sociale* Professor Huguenin states that cancer mortality in France was 60,500 deaths in 1943 and 51,810 in 1936. This is a rate of 161 per hundred thousand inhabitants for 1943. Women represent 56 per cent of the cases and men 44 per cent. Cancer of the uterus is the most common, comprising 24 per cent, and the least frequent is cancer of the urinary system, with 1 per cent. The rate of mortality is higher than for tuberculosis (140 per hundred thousand inhabitants) in 1943, with a total of 55,000 deaths. Five thousand children under 15 years of age lose either their father or their mother each year through cancer. Mortality from cancer is not the same throughout the country; its rate varies from 175 to 200 per hundred thousand inhabitants in the center of France; it is under 125 or from 125 to 150 in the South and from 150 to 175 in the North and the Southeast. A new fact, found generally, is the diminution of the age of cancerous people. This phenomenon, emphasized by Huguenin at the Academy of Medicine, is seen especially among repatriated military prisoners. In this case traumatism plays a part, as was seen after the war of 1914-1918. Of 501 repatriated cancerous people, 6 were under 20 years of age, 64 were from 20 to 30 years old, 268 from 30 to 40 years and 163 over 40 years of age, or 338 patients under age 40.

French Association for the Advancement of Science

Among the numerous foreign delegates at the sixty-fourth congress of the French Association for the Advancement of Science were Richard Gregory Bart, president of the British Association for the Advancement of Science, Edward Appleton, secretary of the Department of Scientific Research, Professor Albrecht, vice president of the American Association for the Advancement of Science and Professors Dean Amory Worcester of Nebraska, Stanley Adair Cain of Tennessee and Capt. Alvin Russell Grove of Pennsylvania and Professors Nesmeianov and Landsberg of the Russian Academy of Sciences. The congress had organized its work in sections: medical sciences, Professor

Baudoin president; electroradiology, Professor Strohl president; pharmacology, Professor Hazard president; hygiene and public health, Dr. Leclainche president. The next congress will be held at Nice in 1946.

BRAZIL

(From Our Regular Correspondent)

RIO DE JANEIRO, Dec. 14, 1945.

Malignant Tumors in Gynecology

In a recent paper published to commemorate the tenth anniversary of Dr. Arnaldo de Moraes's tenure of the post of professor of Clinical Gynecology at the University of Rio de Janeiro, Dr. Hildegard Stoltz, assistant in the service, reviewed 277 malignant tumors in women treated during this decade in Dr. de Moraes's department. The 277 tumors occurred in 3,120 women, an incidence rate of 8.9 per cent. In this total the author does not include cases in which the biopsy, repeated several times, did not afford sufficient foundation for a definite diagnosis of cancer. The cancerous lesions were in the cervix of the uterus in 220 cases (79.4 per cent), body of the uterus in 10 cases (3.3 per cent), cervical canal in 4 cases (1.4 per cent), vagina in 9 cases (3.3 per cent), ovary in 8 cases (2.9 per cent), vulva in 4 cases (1.4 per cent), mammary glands in 13 cases (5.0 per cent), rectum in 5 cases (1.8 per cent), sigmoid colon in 1 case (0.4 per cent), mesentery in 2 cases (0.7 per cent) and bladder in 1 case (0.4 per cent).

During the first years of this ten year period, besides palliative therapy, surgery alone could be used with radium therapy in some cases. Roentgen therapy was not begun until 1938. Treatment of 277 cases was by surgery alone in 32 cases (11.5 per cent), surgery and radium therapy in 6 (2.1 per cent), surgery and roentgen therapy in 14 (5.0 per cent), surgery, radium therapy and roentgen therapy in 1 case (0.3 per cent), radium therapy alone in 101 cases (36.5 per cent), radium therapy and roentgen therapy in 39 cases (14.1 per cent), roentgen therapy alone in 9 cases (3.2 per cent) and palliative treatment alone in 75 cases (27.3 per cent).

Special Medical Courses

At the University of Rio de Janeiro Dr. A. Marques Torres of the Oswaldo Cruz Institute is giving a course for students and physicians on modern aspects of infectious and parasitic diseases. Dr. Claudio Bardy, associate professor of medicine at the same university, is giving a special course on clinical radiology.

The Center of Medical Studies of the Misericordia Hospital, founded last year by the late Dr. Paulo Cesar de Andrade and now bearing his name, is giving several special courses, among which are dietetic treatment of diseases of the digestive apparatus (Dr. Geraldo Seiffert), diagnosis of the diseases of the digestive system (Dr. L. Capriglione) and clinical cardiology (Dr. Magalhães Gomes).

The division of specialization courses of the National Department of Health is now giving, for physicians of several states of Brazil, lectures and demonstrations on mental hygiene and clinical psychiatry, cancer, vital statistics, malaria, trachoma, modern diagnosis of tuberculosis and venereal diseases.

Hospital News

Some time before the entrance of Brazil into the war in 1942 the federal government created in Rio de Janeiro the Central Hospital of the Brazilian Air Force, an institution that probably is today the best hospital of its kind in South America. A private hospital was requisitioned and under the able direction of Colonel Edgard Tostes, one of the first Brazilian physicians to be trained in the United States as an air surgeon, it was enlarged and greatly improved. The hospital has now the new equipment developed during the war in Europe and in the United States, particularly in the field of surgery. Later the government decided to establish several other hospitals in connection with the new air bases: one hospital was opened some months ago in Belem in the state of Pará. Another is to be established in the southern part of the country, perhaps in the state of Paraná.

The Butantan Institute of São Paulo has set up a hospital for the specific treatment of patients suffering from attack by venomous animals, especially snakes.

The Division of Hospital Organization of the National Department of Health has published a booklet entitled "Primer of Modern Hospital Organization," written by Dr. Theophilo de Almeida. This is the second of a series of publications designed to improve the hospital situation in Brazil. Dr. de Almeida has been in the United States for some time studying the organization of American hospitals.

The great Pedro Ernesto General Hospital has been temporarily transferred to the University of Rio de Janeiro, until the construction of University City, a project that the federal government is about to begin.

The legislative assembly of the state of Pernambuco has approved an appropriation for the construction of a hospital for emergency cases at Recife (385,000 population), the capital city of the state. A new corporation has been formed to build a general hospital also in this city. The medical superintendent of the institution, the Santa Catharina Hospital, is Dr. Alberto Borgerth, a leading surgeon of the department of hospitals of Rio de Janeiro.

A division of plastic surgery has been inaugurated at the Hospital das Clinicas, an institution associated with the University of São Paulo. The division will be directed by Dr. Carlos C. Cortese in the department of surgery under the supervision of Professor Edmundo Vasconcellos.

A department of roentgen therapy has been inaugurated at the Moncorvo Filho Hospital of this city. The equipment was a gift from Mr. Mario de Almeida, an industrialist of Rio de Janeiro.

The Hospital Nossa Senhora das Dores of Cascadura, a northern suburb of Rio de Janeiro, has been remodeled to offer better care to dependent tuberculous patients. The x-ray department was one of the sections particularly improved.

Dr. Miguel Couto Filho has donated to the state of Rio de Janeiro land at Cabo Frio, where the state administration is planning to build a modern hospital for crippled children.

Marriages

ROBERT T. MILLER, New York, to Miss Mary Catharine Bolster of Goldsboro, N. C., in Richmond, Va., November 3.

LUCIEN MICHELE PASCUCCI, Waterbury, Conn., to Miss Marcella Ann Czajkowski of St. Louis, November 10.

JOE HENRY MCCORMICK JR., Monroe, La., to DR. THIESEN AGATHA RAY of Charleston, S. C., November 13.

MYERS HAMPTON HICKS to Miss Edith Monroe McEachern, both of Florence, S. C., in November.

RICHARD BRUCE O'BRYAN, Columbus, Ind., to Miss Mary Alice Pesch of Plymouth, August 25.

WILLIAM E. MITCHELL, Memphis, Tenn., to Miss Louise Davis of Chaffee, Mo., in November.

WILLIAM ROY GREEN, Tupelo, Miss., to Miss Helene Maxine White of Victoria, Va., October 29.

WILLIAM MAURICE CANNON to Miss Theoleen Gantt, both of Charleston, S. C., October 17.

GEORGE T. WOHL to DR. NORMA SPIELMAN, both of Philadelphia, November 17.

NEVIN E. AIKEN to Miss Barbara Botts, both of Fort Wayne, Ind., July 9.

SAMUEL S. LEITER to Miss Beverly Agins, both of Philadelphia, October 21.

JOHN H. KNEIDEL to Miss Jean Lou Foley, both of Indianapolis, July 14.

Correspondence

DIFFERENTIAL DIAGNOSIS OF ECTODERMAL DYSPLASIA AND OF ROTHMUND'S SYNDROME

To the Editor:—Cole, Giffen, Simmons and Stroud (THE JOURNAL, Nov. 10, 1945, p. 723) described congenital cataracts in 2 sisters aged 24 and 10 months with congenital ectodermal dysplasia. Both infants exhibited cataracts in early life and a peculiar skin abnormality. The authors state that "on casual observation the skin changes suggest an exaggerated case of cutis marmorata. On close inspection the skin of most of the body is mottled with dull, red, confluent, slightly depressed and mildly indurated zones, which blanch very slightly with pressure. Between these darker areas are small, pale, ill defined 3-10 mm. islands of skin which appear whitish. These skin changes are most accentuated over the extremities, head and back." This description is identical in detail with the description and the picture published first by Rothmund in 1868 entitled "Cataracts in Association with a Peculiar Degeneration of the Skin" (Rothmund, A.: Ueber Katarakt in Verbindung mit einer eigenthümlichen Hautdegeneration, *Arch. f. Ophth.* **14**:159, 1868, cited by Beetham, W. P.: Atopic Cataracts, *Arch. Ophth.* **24**:21 [July] 1940). This syndrome, known in the literature as "Rothmund's syndrome," occurs collaterally in sisters and brothers in the first weeks or years of life. In the families of infants afflicted with this disease similar abnormalities are suggested only vaguely in 1 or 2 instances. Certainly a dominant or incomplete dominant heredity is not observed in these infants.

In contrast to Rothmund's syndrome, the heredity in ectodermal dysplasia of the anhydrotic type (type Widderburn-Guilford-Hutchinson) is definitely dominant (Thannhauser, S. J.: Hereditary Ectodermal Dysplasia of the Anhydrotic and Hydrotic Types, *Practitioner*, Library of Medicine and Surgery, 1938, New York, Appleton-Century Company, **13**:473). In ectodermal dysplasia of the hydrotic type (type McKay and Davidson) the abnormality is transmitted by both sexes and present in many members of the ancestry. The clinical triad of ectodermal dysplasia of the anhydrotic type consists of (1) anhydrosis, (2) hypotrichosis and (3) anodontia or severe abnormality of the denture. Persons exhibiting ectodermal dysplasia of the hydrotic type maintain the ability to perspire; the sweat and sebaceous glands are present in some instances not as numerous as in normal persons. Similar to the cases of the anhydrotic type, absence of many teeth or anomalies of the denture, as well as dystrophy of the hair, are observed. In these cases of the hydrotic type dystrophy of the nails is an additional feature. None of the numerous cases of ectodermal dysplasia of the anhydrotic and hydrotic type reported in the literature exhibited either cataracts in infancy or later life or abnormalities of the texture of the skin as described by Cole, Giffen, Simmons and Stroud. The skin in cases of ectodermal dysplasia of the hydrotic and anhydrotic type is smooth, fine and dry. S. J. Thannhauser in an article entitled "Werner's Syndrome (Progeria of the Adult) and Rothmund's Syndrome: Two Types of Closely Related Heredofamilial Atrophic Dermatoses with Juvenile Cataracts and Endocrine Features" (*Ann. Int. Med.* **23**:559 [Oct.] 1945) attempted to describe the features of these syndromes and to distinguish the symptomatology of these clinical entities from related clinical syndromes like ectodermal dysplasia of the hydrotic type. According to the analysis of the syndromes discussed in Thannhauser's paper it is evident that the cases of the 2 sisters with infantile cataracts and atrophic hereditary dermatoses are not correctly classified by Cole, Giffen, Simmons and Stroud if listed as ectodermal dysplasia of the hydrotic or anhydrotic type.

The main features of the 2 infant sisters are cataracts and a dermatosis as described by Rothmund. A. Siegrist (Der graue Altasstar, Berlin, Urban and Schwarzenberg, 1928), A. F. Schnyder (Ueber Katarakt bei poikilodermie-artiger Hauterkrankung, *Klin. Monatsbl. f. Augenh.*) and more recently by R. Seefelder (Ueber familiäres Auftreten von Katarakt und Poikilodermie) collaterally occurring in sisters and brothers of one family. The etiology common to the two syndromes, ectodermal dysplasia of the two types as well as Rothmund's syndrome, are germ plasm defects. In ectodermal dysplasia a defect restricted to the ectodermal germ layer is evident, while in Rothmund's syndrome a multiple germ plasm defect is suggested, since, besides the ectodermal, also the mesodermal layer (involvement of the veins visible as telangiectases and distended veins of the subcutaneous tissue) is involved in the malformation.

In the interest of a correct registration in indexes it would be important that the authors reconsider their classification of the cases of the 2 infant sisters afflicted with cataracts and atrophic dermatoses, particularly because the 2 infant sisters are the first 2 cases of Rothmund's syndrome published in the American literature.

S. J. THANNHAUSER, M.D., Boston.

ODOROUS WOUNDS AND FISTULAS

To the Editor:—In THE JOURNAL, Dec. 15, 1945, page 1094, Dr. W. Wayne Babcock offered several valuable suggestions pertaining to the treatment of odorous wounds and fistulas. As no drug is equally efficient in all instances and complete failures may occur, a few additional methods of dealing with malodorous wounds may be given a trial.

In advanced ulcerative cancer of the breast with offensive odors, granulated sugar scattered over the wound at frequent intervals is of great value.

Where the amount of secretion is large, powdered charcoal may be preferable on account of its great hygroscopic power. As a deodorant, charcoal is particularly efficient in urinary fistulas. Because of the property to absorb urinary odors, charcoal was frequently seen in men's lavatories before it was replaced by modern plumbing installations.

Another economical way of combating fetid secretions consists in applications of sterilized sawdust with addition of 10 per cent iodoform, placed in small gauze sacks. The absorptive and deodorant power of this mixture is especially appreciated by patients with jejunostomy or ileostomy. In chronic conditions this method offers the additional advantage of a very low cost.

It goes without saying that all these methods can be considered only as an adjuvant to an untiring nursing care.

JOSEPH K. NARAT, M.D., Chicago.

Council on Medical Education and Hospitals

At its December 1945 meeting the Council on Medical Education and Hospitals of the American Medical Association passed the following resolution:

The Council on Medical Education and Hospitals of the American Medical Association does not intend to remove any hospital from the lists of hospitals approved for internships or residencies which furnishes teaching facilities to any veteran medical officer who is eligible for educational benefits under the Servicemen's Readjustment Act, provided the veteran is legally eligible for medical licensure in the state in which the hospital is located.

VICTOR JOHNSON, Secretary.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Workmen's Compensation Acts: Compensability of Traumatic Neurasthenia.—In the course of his employment in 1936 the claimant sustained an injury to his left leg, which necessitated amputation halfway between the knee and the ankle. The Department of Labor and Industries of the state of Washington afforded him treatment, allowance for time lost, made the maximum award possible under the statute then in effect, for permanent partial disability and closed his claim in 1938. In 1941 the claimant petitioned the department to reopen his claim on the ground of aggravation of disability. He alleged that the end of the stump of his leg was tender; that the left knee was painful and unstable and the left thigh was atrophied; that he suffered pain and discomfort in the genitourinary tract, pain in the back, headaches, dizziness, and loss of hearing, vision and memory. The department, in effect, declined to reopen the claim and he appealed to the superior court, Pierce County, where the matter was tried by jury. The jury returned a verdict in favor of the claimant for 60 per cent of the maximum $2,400 allowable under the industrial insurance act of Washington for unspecified permanent partial disability, and the department and the employer appealed to the Supreme Court of Washington.

The sole question for our determination, said the Supreme Court, is whether the evidence adduced in the trial court was sufficient to take the issue of aggravation of disability to the jury. From the evidence it appears that the claimant has developed a well defined case of neurasthenia since his original claim was closed by the department in 1938. At the trial a physician testified that in his opinion this condition is the result of the injury sustained in 1936. The appellants contended, however, that the opinion of this physician is based wholly on subjective symptoms and is therefore insufficient, under applicable decisions of the Supreme Court of Washington, to sustain the award. The substance of the decisions cited by the appellants, answered the court, is that the opinion of the physician, based *wholly* on statements made by a workman, disclosing subjective symptoms only, is insufficient to take the issue of aggravation of disability to the jury. But here the physician testified:

> He can hear a watch tick from 4 to 5 inches but he can't locate the sound, he claims. . . . The measurements of his right thigh at 10 inches is 22, where the left thigh is only 19½. . . . The stump of the left leg is tender and sensitive and there is pain up and in the left groin and the hip. . . . There is some swelling and tenderness through the knee and the stump. . . . There is also a growth about the size of a walnut at the head of the fibula. He is very nervous. . . . It [difference in measurement of the thighs] shows an atrophy of the injured thigh. . . . You can see some of these conditions; others you cannot. Part are subjective and part are objective.

Obviously this physician's opinion is not based *wholly* on subjective symptoms. The appellants contended, however, that the objective symptoms referred to in the physician's testimony all pertained to the condition of the left leg, for the injury to which the claimant was awarded previously the maximum compensation allowable. The trial court, answered the Supreme Court, very properly instructed the jury that, this being the case, no additional allowance for aggravation of disability could be made on account of the condition of the leg. But this did not render evidence of the condition of the leg incompetent. On the contrary, the condition of the leg was very pertinent to the establishment of the neurasthenic condition on which the claim of aggravation of disability must rest. A physician called by the appellants testified in effect that an injury resulting in an amputation frequently does cause an injured workman to have functional complaints; that by functional he meant a condition "more or less imaginative on the part of the person, that is, something that can't be demonstrated on examination and yet the person just feels it himself"; and that the complaints of the workman "outside of the leg" were connected with the accident "from the functional standpoint" solely.

As justifying its conclusion the court quoted from *Peterson v. Department of Labor and Industries,* 178 Washington 15, 33 P. (2d) 650, as follows:

> To say that there has been no aggravation of appellant's injuries since September 1929, we would have to ignore the testimony of several disinterested lay witnesses and two physicians who testified on behalf of appellant. The lay witnesses testified to a pronounced increase in loss of memory. The two medical men found an hysterical condition to exist that was manifestly not feigned. There is no evidence in the record of the existence of such symptoms in 1929. . . .
>
> To say that this progressing disability of appellant is not due to the accident of July 10, 1926 is, in our opinion, contrary to the clear preponderance of the evidence. No other cause for his present condition is suggested. . . . Classifying his case as a "desire neurosis," it is still traumatic in origin. It is real, and it is a condition that would not exist but for the accident.

What was said in the Peterson case, said the court, might well be said of the evidence in this case. The judgment in favor of the claimant was accordingly affirmed.—*Anderson v. Department of Labor and Industries, 159 P. (2d) 397 (Wash., 1945).*

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and the Examining Board in Specialties were published in THE JOURNAL, Jan. 19, page 173.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: Mar. 19-21. Sec. Dr. B. F. Austin, 519 Dexter Ave., Montgomery 4.

ALASKA: Juneau, March 5. Sec., Dr. W. M. Whitehead, Box 140, Juneau.

ARKANSAS:* *Medical.* Little Rock, June 6-7. Sec., Medical Board of the Arkansas Medical Society, Dr. L. J. Kosminsky, Texarkana. *Eclectic.* Little Rock, June 6. Sec., Dr. C. H. Young, 1415 Main St., Little Rock.

CALIFORNIA: *Written.* Los Angeles, March 11-14. Sec., Dr. Frederick N. Scatena, 1020 N St., Sacramento 14.

CONNECTICUT:* *Medical. Examination.* New Haven, March 12-13. *Endorsement.* New Haven, March 26. Sec. to the Board, Dr. Creighton Barker, 258 Church St., New Haven. *Homeopathic.* Derby, March 12-13. Sec., Dr. Joseph H. Evans, 1488 Chapel St., New Haven.

DELAWARE: *Examination.* Dover, April 9. *Reciprocity.* Dover, April 16. Sec., Medical Council of Delaware, Dr. J. S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA:* *Reciprocity.* Washington, March 11. Sec., Commission on Licensure, Dr. G. C. Ruhland, 6150 E. Municipal Bldg., Washington 1.

FLORIDA:* Jacksonville, June 24-25. Sec., Dr. Harold D. Van Schaik, 2736 S.W. Seventh Ave., Miami 36.

INDIANA: Indianapolis, April 25-27. Sec., Board of Medical Registration & Examination, Dr. W. C. Moore, 301 State House, Indianapolis 4.

KANSAS: Kansas City, March 12-13. Sec., Board of Medical Registration and Examination, Dr. J. F. Hassig, 905 N. Seventh St., Kansas City 10.

KENTUCKY: Louisville, March 25-27. Sec., State Board of Health, Dr. Philip E. Blackerby, 620 S. Third St., Louisville 2.

MAINE: Portland, March 12-13. Sec., Board of Registration of Medicine, Dr. A. P. Leighton, 192 State St., Portland.

MASSACHUSETTS: Boston, March 12-15. Sec., Board of Registration in Medicine, Dr. H. Q. Gallupe, 413-F State House, Boston.

MICHIGAN:* Detroit, March 26-28. Sec., Board of Registration in Medicine. Dr J. E. McIntyre, 100 W. Allegan St., Lansing 8.

MONTANA: Helena, April 1-3. Sec., Dr. O. G. Klein, First National Bank Bldg., Helena.

NEVADA: *Reciprocity.* Carson City, Feb. 4. Sec., Dr. G. H. Ross, 215 N. Carson St., Carson City.

NEW JERSEY: Trenton, June 18-19. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO:* Santa Fe, April 8-9. Sec., Dr. LeGrand Ward, 141 Palace Ave., Santa Fe.

NEW YORK: Jan. 28-31. Sec., Dr. Jacob L. Lochner, Education Bldg., Albany.

OHIO: *Examination.* Columbus, March 19-22. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA:* Oklahoma City, March 23. Sec., Dr. J. D. Osborn Jr., Frederick.

PENNSYLVANIA: Harrisburg, January. Act. Sec., Bureau of Professional Licensing, Department of Public Instruction, Mrs. M. G. Steiner, 351 Education Bldg., Harrisburg.

SOUTH CAROLINA: Columbia, Feb. 24-26. Sec., Dr. N. B. Heyward, 1329 Blanding St., Columbia.

TEXAS: Austin, March 27-29. Sec., Dr. T. J. Crowe, 918-20 Texas Bank Bldg., Dallas 2.

VERMONT: Burlington, March or April 1946. Sec., Dr. F. J. Lawliss, Richford.

VIRGINIA:* Richmond, March 25-28. Sec., Dr. J. W. Preston, 803 Medical Arts Bldg., Roanoke.

WYOMING: Cheyenne, Feb. 4. Sec., Dr. G. M. Anderson, Capitol Bldg., Cheyenne.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

CONNECTICUT: Feb. 9. Address State Board of Healing Arts, 250 Church St., New Haven 10.

FLORIDA: Gainesville, June 4. Final date for filing application is May 20. Sec. Dr. J. F. Conn, John B. Stetson University, DeLand.

OREGON: Portland, March 2. Sec., Board of Higher Education, Mr. C. D. Byrne, University of Oregon, Eugene.

RHODE ISLAND: Providence, Feb. 13. Chief, Division of Examiners, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

and atrophic hereditary dermatoses are not correctly classified

VICTOR JOHNSON, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1936 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

210:421-560 (Oct.) 1945

*Studies on Streptomycin in Man: I. Absorption, Distribution, Excretion and Toxicity. H. A. Zintel, H. F. Flippin, Anna C. Nichols, Marjorie M. Wiley and J. E. Rhoads.—p. 421.

Case of Streptococcus Viridans Pneumonia Successfully Treated with Penicillin. S. Solomon.—p. 431.

Observations on Continuous Intramuscular Method of Administering Penicillin. H. L. Hirsh and H. F. Dowling.—p. 435.

Electrocardiographic Observations in Normal Thyroidectomized and Thiourea Treated Rats. R. K. Waller and H. A. Charipper, with technical assistance of A. H. Stenger.—p. 443.

Study of Relationship of Basal Body Temperature to Basal Metabolic Rate in Hospitalized Patients. C. Moses.—p. 453.

*Danger of Continued Arsenotherapy in Cases of Erythema of Ninth Day. W. Leifer.—p. 458.

Possible Effectiveness of L. Casei Factor ("Folic Acid") Concentrates on Refractory Anemia and Leukopenia, with Particular Reference to Leukopenia Following Radiation Therapy. C. J. Watson, W. H. Sebrell, J. L. McKelvey and F. S. Daft, with technical assistance of Violet Hawkinson.—p. 463.

Synchronization of Neurotic Behavior Patterns. E. Bergler.—p. 470.

Atrial Septal Defect: Study of Hemodynamics by Technic of Right Heart Catheterization. E. S. Brannon, H. S. Weens and J. V. Warren.—p. 480.

Idiopathic (?) Hypoprothrombinemia: Report of Case. V. T. Austin and H. Quastler.—p. 491.

Aplastic Anemia Terminated by Removal of Mediastinal Tumor. G. H. Humphreys and H. Southworth.—p. 501.

Use of Simple Postural Test in Neurocirculatory Asthenia. W. A. Jeffers, S. C. Sheiman and G. H. O'Brasky.—p. 511.

Salmonella Appendicitis. A. D. Rubenstein and B. B. Johnson.—p. 517.

Biologic False Positive Reactions to Tests for Syphilis. H. Beerman.—p. 524.

Cancer of Mouth: Its Present Day Treatment. W. Mayne.—p. 548.

Studies on Streptomycin in Man.—Zintel and his co-workers found that the blood level of streptomycin following a single intravenous injection in man is better maintained than in the case of penicillin. Detectable amounts were usually present for six hours, as compared with two and one-half to three hours in the case of penicillin even when the intramuscular route was used for the latter drug. Following parenteral injection the drug is distributed throughout most body fluids: blood, urine, ascitic fluid, pleural fluid, aqueous humor, vitreous humor, amniotic fluid and bile. Small amounts of the drug appeared in the spinal fluid in healthy persons, but in a case of Hemophilus influenzae meningitis the spinal fluid contained 25 units per cubic centimeter. The main route of excretion for streptomycin after parenteral injection appears to be the urinary tract. Relatively little transfer of streptomycin occurs between the blood and the lumen of the gastrointestinal tract in either direction. Owing to the poor transfer of the drug across the walls of the alimentary tract, it would seem appropriate to use the drug both orally and parenterally in infections in which the pathogenic organisms are found both in the gastrointestinal tract and in the blood stream. Early side reactions have not been alarming, and late toxic effects have not so far been observed.

Danger of Continued Arsenotherapy in Erythema of the Ninth Day.—Leifer reports 14 cases in which prompt resumption of arsenical treatment after reaction was followed by severe parenchymatous injury. All of the patients were soldiers. Oxophenarsine hydrochloride was given twice weekly and bismuth subsalicylate once weekly. The maximal dose of oxophenarsine hydrochloride, 0.06 Gm., was generally employed, although frequently the initial dose was 0.03 or 0.04 Gm. The reaction occurred six to eleven days after the first dose of oxophenarsine hydrochloride. In 6 cases it appeared after three doses of the drug had been administered, in 5 cases after four doses and in 3 cases after five doses. Only 3 of the 14 patients had an eruption. Fever after the initial dose of arsenic is usually a manifestation of the systemic Herxheimer reaction, which is ascribed to massive destruction of treponemes in the circulating blood, with release of their toxins or proteins. It does not recur after subsequent injections. Fever after the second, third or later injection of arsenic must be regarded as evidence of toxic reaction or intercurrent infection. The safest course is to consider any febrile episode (except the Herxheimer reaction), especially in the first three weeks of arsenotherapy, a probable manifestation of sensitivity to arsenic. This is particularly true when the entire syndrome of erythema of the ninth day is present. It appears also to apply with equal force to those cases in which no rash is detected. In all 14 patients early continuation of arsenic after the initial reaction led to serious parenchymatous damage in the form of jaundice and agranulocytosis, with or without nephritis. Twelve of the 14 patients subsequently received an intensive course of penicillin without untoward reactions.

Annals of Surgery, Philadelphia

122:449-744 (Oct.) 1945

Problem of Portal Hypertension in Relation to Hepatosplenopathies. A. O. Whipple.—p. 449.

Technic of Using Vitallium Tubes in Establishing Portacaval Shunts for Portal Hypertension. A. H. Blakemore and J. W. Lord Jr.—p. 476.

Use of Vitallium Tubes in Strictures and Absence of Common Bile Duct. W. H. Cole, C. Ireneus Jr. and J. T. Reynolds.—p. 490.

Advanced Carcinoma of Extrahepatic Bile Ducts: Choleangiocholecystocholedochectomy. A. Brunschwig and R. R. Bigelow.—p. 522.

Arteriovenous Aneurysm: Exposure of Tibial and Peroneal Vessels by Resection of Fibula. D. C. Elkin and R. P. Kelly.—p. 529.

Surgical Treatment of More Common Types of Diaphragmatic Hernia: Esophageal Hiatus, Traumatic, Pleuroperitoneal Hiatus, Congenital Absence and Foramen of Morgagni: Report of 404 Cases. S. W. Harrington.—p. 546.

Congenital Diaphragmatic Hernia. E. J. Donovan.—p. 569.

*Idiopathic Dilatation of Esophagus: Differentiation of Clinical Types and Successful Operation in Intractable Cases. W. J. M. Scott.—p. 582.

Congenital or Hereditary Polyposis of Colon. D. B. Pfeiffer and F. M. S. Patterson.—p. 606.

*Local Use of Sulfanilamide in Treatment of Acute Appendicitis: Review of 1,481 Cases. R. S. Mueller.—p. 625.

Secondary Hemorrhage Arising from Gunshot Wounds of Peripheral Blood Vessels. N. E. Freeman.—p. 631.

Secondary Infection of Wounds. G. A. Caldwell.—p. 641.

*Traumatic Shock Incurable by Volume Replacement Therapy: Summary of Further Studies, Including Observations on Hemodynamics, Intermediary Metabolism and Therapeutics of Shock. J. Fine, H. A. Frank and A. M. Seligman.—p. 652.

Translocation of Fluid Produced by Intravenous Administration of Isotonic Salt Solutions in Man Postoperatively. F. A. Coller, Vivian Ioh, H. H. Vaughan and others.—p. 663.

Metabolic Alterations Following Thermal Burns: V. Use of Whole Blood and Electrolyte Solution in Treatment of Burned Patients. W. E. Abbott, M. A. Pilling and others.—p. 678.

Rationale of Whole Blood Therapy in Severe Burns: Clinical Study. E. I. Evans and I. A. Bigger, with clinical assistance of H. Nachman.—p. 693.

Direct Flap Repair of Defects of Arm and Hand: Preparation of Gunshot Wounds for Repair of Nerves, Bones and Tendons. J. B. Brown, B. Cannon and others.—p. 706.

Design for Surgical Convalescence. R. Elman and J. T. Akin Jr.—p. 716.

Idiopathic Dilatation of Esophagus.—Scott recognizes four clinical types which probably differ from one another in their etiology. These types are (1) achalasia of the esophagus, (2) true cardiospasm, (3) dilatation associated with a constriction at or just above the cardia and (4) dolichoesophagus. Achalasia is probably the most common type. It usually responds well to dilation. In true cardiospasm the reflex originating focus should be discovered and removed. Cases caused by a partial constricting band near the cardia are few in number but are probably resistant to conservative treatment. Dolichoesophagus, an S shaped lengthening with pooling of esophageal contents at different levels, should probably be operated on as soon as it is recognized. This type is very difficult to control when the dilatation becomes gigantic and is complicated by infection of the esophageal wall. Subdiaphragmatic esophagogastrostomy (of the Finney pyloroplasty type) appears to be the operation of choice in cases of idiopathic dilatation of the esophagus resistant to the usual conservative measures. The symptomatic results of this operation are usually excellent whether or not the dilatation of the esophagus is entirely corrected. The danger

of the operation is not excessive when proper precautions are taken. After this operation has been employed more extensively, the number of cases for which it is indicated will probably be considerably increased, but it should never replace conservative dilation in the majority of cases.

Local Use of Sulfanilamide in Appendicitis.—Mueller compares results obtained in a five year period preceding 1940 with the five year period since 1940 when sulfanilamide was used intraperitoneally in acute appendicitis at the Roosevelt Hospital. Sulfanilamide was applied locally in 320 out of a total of 739 cases of acute appendicitis and its complications. The mortality in this group was 0.4 per cent and the postoperative complications were relatively few. In a similar group of cases in the preceding five year period operations were performed in 742 cases, with a mortality of 2.83 per cent and with considerably more complications. No serious toxic effects followed the use of sulfanilamide in the peritoneal cavity. Local use of sulfanilamide is preferable because of the possibility of a high local concentration of the drug in the peritoneal cavity. In cases complicated by abscess or peritonitis penicillin is employed postoperatively in addition to the local use of sulfanilamide. In all doubtful cases drainage should be done, as it was before the use of the sulfonamide drugs.

Traumatic Shock.—Fine and his associates earlier presented evidence that in traumatic shock the capillaries outside areas of injury do not "leak" plasma; the essential pathologic condition is not a disturbed capillary permeability but a disturbed peripheral circulation in which the amount of blood in active circulation is deficient. The therapeutic problem is one of restoring normal velocity and volume flow through capillaries. If after loss of blood replacement is effected early the problem is solved, but if too much time elapses before replacement the damage caused by the loss becomes irreversible. Whether this damage consists in a loss of integrity inherent in the central or peripheral circulatory apparatus per se or is secondary to the failure of an extravascular controlling factor is not known. No explanation for the shock state other than the hemodynamic imbalance was necessary. Tourniquet shock differs from hemorrhagic shock, but the authors show that the increased hematocrit of tourniquet shock is a liability over and above that of volume deficiency and can account for the observed differences between tourniquet shock and hemorrhagic shock. Volume deficiency is by far the greater danger, and its restoration is a more urgent need than is that of normal viscosity. Utilizing hemorrhagic shock and eliminating as far as possible operative manipulations, anesthetics and other forms of trauma, which facilitate the development of irreversibility or otherwise complicate the shock state, the authors studied various agents in every instance only after the shock state was found to be unresponsive to the replacement of all lost blood. The course of events in hemorrhagic shock leading to the development of a state of irreversibility to transfusion is a function of the severity and duration of inadequate capillary flow, with a resulting cumulative adverse effect on the integrity of cellular function in general or on a basic biochemical function in a controlling vital organ such as the liver. In studies on the intermediary metabolism in shock the aim was to discover some point in the process of biochemical disintegration, i. e. failure of completion of a normal biochemical reaction, which would identify the onset of irreversibility. It was found that metabolites, including the amino acids, are catabolized as readily in the irreversible as in the reversible phase of shock, almost as well as in the normal animal, and the increased concentration of these substances in the blood represents an adjustment of metabolic reactions at a new level. The effect of viviperfusion of the liver on the prevention of the development of irreversibility is not due to the removal of toxins or to the provision of protective substances by the donor dog during the shock phase, because the same processes operate in the dog viviperfused via the jugular vein.

Cincinnati Journal of Medicine

26:337-416 (Oct.) 1945

"Juxtapharyngeal" Spaces as Carriers and Barriers of Suppurations: New Anatomic Classification. K. Tschiassny.—p. 337.
Tropical Diseases of Skin in Returning Military Personnel and Tourists. L. Goldman.—p. 352.

Journal of Immunology, Baltimore

51:127-190 (Sept.) 1945

Comparison of Value of Clarase, Penicillinase and Cysteine Hydrochloride in Revealing Presence of Contaminating Organisms in Preparations of Penicillin. C. M. McKee and B. F. Chow.—p. 127.
Immunologic Relations Between Types of Shigella Paradysenteriae (Flexner) and Other Shigellae. A. J. Weil, L. A. Barnes and M. Binder.—p. 133.
Application of Quantitative Complement Fixation Test to Serum Diagnosis of Typhus Fever. F. M. Varley and F. R. Weedon.—p. 139.
Addition of Nitrogen from Bovine Complement to Specific Precipitates. O. Bier.—p. 147.
Antigenic Relationship of Various Types of Shigella Alkalescens to Shigella Paradysenteriae. E. Neter, with technical assistance of E. C. Deuchler.—p. 151.
Conversion of Agglutinins and Precipitins into "Univalent" (Nonagglutinating or Nonprecipitating) Antibodies by Photodynamic Irradiation of Rabbit Antisera vs. Pneumococci, Sheep Red Cells and Sea Urchin Sperm. A. Tyler.—p. 157.
Experimental Studies on Yellow Fever Protection Test. K. C. Smithburn.—p. 173.

Journal of Investigative Dermatology, Baltimore

6:235-278 (Aug.) 1945

Survival of Tissues at Ice Box Temperatures. Elsie M. Walter, H. Sharlit and J. C. Amersbach.—p. 235.
Dermatitis from Synthetic Resins. L. Schwartz.—p. 239.
Isolation of Iron Pigment from Human Red Hair. P. Flesch and S. Rothman.—p. 257.
Insensible Perspiration of Skin in Hyperkeratotic Conditions. Z. Felsher and S. Rothman.—p. 271.

Journal of Pediatrics, St. Louis

27:1-392 (Oct.) 1945

*Glycogen Storage Disease: Observations on Pathologic Physiology of 2 Cases of Hepatic Form of Disease. E. M. Bridge and L. E. Holt Jr.—p. 299.
Spinal Cord Tumors in Children: Study of 3 Cases of Ependymoma. A. Nisenson and G. H. Patterson.—p. 315.
Adrenogenital Pseudohermaphroditism Treated with Stilbestrol. C. B. McIntosh and W. E. Brown.—p. 323.
Kernicterus: Neurologic Sequelae of Erythroblastosis Fetalis. J. M. Docter.—p. 327.
Percutaneous Immunization Against Diphtheria. H. Vollmer and M. E. Wegman.—p. 334.
Galactosemia with Hepatic Damage: Report of Case in Infant, with Recovery. S. Mellinkoff, B. Roth and J. MacLaggan.—p. 338.
Rheumatic Heart Disease with Associated Meningoencephalitis. R. H. High and E. E. Aegerter.—p. 343.
Myositis Ossificans Progressiva: Review of Literature, with Report of Case. K. J. Ryan.—p. 348.
*Erythroblastosis Fetalis. H. R. Litchfield.—p. 353.
Avoiding Behavior Problems. B. Spock.—p. 363.

Glycogen Storage Disease.—According to Bridge and Holt a clinical diagnosis of von Gierke's disease or, as it is commonly called, glycogen disease cannot always be made with precision because the criteria necessary to establish the diagnosis are not clearly defined. The variations in symptoms suggest that more than one disease entity may be included under that name. The authors report 2 cases which belong to the so-called hepatic type of the disease. They believe that this form constitutes a clinical and physiologic entity. The 2 patients, a girl of 15 months and a boy of 5½ years, presented a strikingly similar clinical picture. The microscopic appearance of the sections obtained at biopsy were indistinguishable from each other or from pictures published in other reports. Both showed a high level of liver glycogen. The fat content of the liver in both cases was normal. Observations on liver slices freshly removed at biopsy have shown an abnormal stability of the glycogen, but a satisfactory glycogenolytic response was obtained on admixture with fresh normal liver, confirming previous work that the glycogenolytic enzyme system is defective in this condition. Liver slices treated with various enzyme preparations, including phosphorylase and amylase, gave results which were inconclusive as to the nature of the enzyme defect. It was demonstrated that liver functions other than glycogenolysis may be affected in this disease, defective prothrombin formation and defective methylation being observed. In 1 patient a severe lipemia was present at the age of 2 years, which had almost completely disappeared at the age of 6 years, suggesting that the associated disturbance of fat metabolism may be a self-limited one. An unidentified reducing substance was found, probably belonging to the pentose group, in the urine of 1 of the patients. Particular attention is called to two indirect results of the impaired glycogenolysis:

(*a*) an abnormal conversion of carbohydrate to fat, demonstrated by respiratory quotient studies, which leads to obesity; (*b*) impaired nitrogen retention, brought about apparently by excessive gluconeogenesis from protein in the effort to sustain blood sugar, a condition which may interfere with normal growth. The latter condition may be satisfactorily treated by the administration of an extra protein meal at night.

Erythroblastosis Fetalis.—The discrepancy between the relatively large number of marriages of Rh-positive men to Rh-negative women, estimated at about 13 per cent of all marriages, and the low incidence of erythroblastosis, namely about 0.1 to 0.2 per cent of births, demands some explanation. Apparently the presence of the factor in the husband and its absence in the wife are not always sufficient to cause the disease in the child. Among factors which might explain this discrepancy Litchfield mentions (1) possible variations in the permeability of the placenta, (2) that more than one pregnancy may be required to induce an adequate degree of immunization, (3) that the disease may be mild and escape recognition and (4) that men who have inherited the Rh factor from one parent only, that is, heterozygous fathers, do not transmit the Rh factor to all children. Theoretically it would seem that isoimmunization could occur in an Rh-negative child of an Rh-negative father and Rh-positive (heterozygous) mother, but it is assumed that this does not occur, because, as is well known, infants produce antibodies very poorly. Blood specimens for determination of Rh factors should be taken from the mother at the same time as blood for the Wassermann test, usually in the second or third months of pregnancy. Blood smears for erythroblastosis should be taken from the infant at the time of delivery. Patients who are likely to have repeated transfusions should be typed for the Rh factor to avoid immunizing Rh-negative persons by the use of Rh-positive blood. This is especially important in women of childbearing age to avoid the possibility of harming an Rh-positive fetus at a later pregnancy. Wiener and Wexler caution that in hemolytic anemia of the newborn transfusions of blood from the mothers are contraindicated because of the additional antibodies which would be introduced; that the father's Rh-positive blood (or that of any other Rh-positive donor) should not be used because the tissues of the infant contain enough stored antibodies to destroy any additional Rh-positive blood, and that the infant should not nurse, since antibodies may be transmitted through the colostrum and milk. They give blood from group O Rh-negative donors.

Journal of Thoracic Surgery, St. Louis

14:339-414 (Oct.) 1945

Observations on Pulmonary Arterial Pressure and Peripheral Venous Pressure Following Arterial Blood Loss. R. M. Eaton, E. W. Czebrinski and J. R. Smith.—p. 339.
*Congenital Coarctation of Aorta and Its Surgical Treatment. C. Crafoord and G. Nylin.—p. 347.
Proximal Extension of Carcinoma of Lung in Bronchial Wall. D. F. Griess, J. R. McDonald and O. T. Clagett.—p. 362.
Closed Extrapleural Pneumonolysis: Preliminary Report. J. S. Conant. —p. 369.
Abnormal Esophageal Communications: Their Types, Diagnosis and Therapy. O. A. Abbott.—p. 382.
Large Anomalous Vein ("Left Vena Cava") Encountered in Operation for Ligation of Patent Ductus Arteriosus. C. R. Lam.—p. 393.
Drainage of Cavities in Bilateral Pulmonary Tuberculosis. V. S. Randolph.—p. 395.
Mediastinal Cyst of Gastric Origin. J. D. Steele and J. Schmitz. —p. 403.
Neurofibroma of Diaphragm. K. P. Klassen, R. Patton and F. M. Bemen.—p. 407.
Self-Retaining Scapula Retractor for Thoracoplasty. K. P. Klassen. —p. 414.

Surgical Treatment of Coarctation of Aorta.—Crafoord and Nylin believed that, in patients with congenital isthmic stenosis who already possessed a well developed and satisfactorily functioning collateral system between the large arteries arising central to the coarctation and the arteries in the lower half of the body, they could keep the aorta closed at a point immediately peripheral to the left subclavian artery for a considerable period without causing danger through cutting off the blood flow to organs in the part of the body supplied by arterial blood from arteries peripheral to the aortic stenosis. The relatively poor prognosis in cases of aortic coarctation seemed to be sufficient justification for making an attempt at surgical treatment of these patients. The most important diagnostic sign of coarctation of the aorta is the increased blood pressure in the upper part of the body. Some cases of coarctation show a normal blood pressure in the arms. Every young person with hypertension should be examined for coarctation. Absence of pulsations in the popliteal artery or a lower blood pressure in the legs than in the arms should suggest coarctation. Often collateral pathways form tortuous and dilated arteries which can be seen and can be palpated over the back, especially in the interscapular region or on the lateral part of the chest in the axillas. In most cases the dilated tortuous intercostal arteries cause erosions or notchings of the ribs, which are seen in the x-ray film and, if present, they are a sign of coarctation. The authors describe 2 cases in which the Crafoord operation was performed. In both patients the operation was planned as a trial thoracotomy in order to ascertain whether the aortic wall was in a condition to permit circular suture of the vessel after resection of the stricture. If the wall had shown signs of morbidity or if, after mobilization, it seemed unlikely that the aorta could be made sufficiently mobile to allow coaptation of the resected edges without tension, after the removal of the stricture, the authors would not have continued the operation. However, the operation was completed successfully on both patients and both were in excellent health at a follow-up examination six months later.

Ohio State Medical Journal, Columbus

41:881-976 (Oct.) 1945

Prevention of Late Postpartum Morbidity. Z. J. R. Hollenbeck.—p. 905.
Human Ornithosis: Report of Case with Relapse. H. A. Freckman. —p. 914.
Urogenital Tuberculosis. V. C. Laughlin.—p. 916.
Cancer of Rectum and Pelvic Colon. W. H. Hamilton.—p. 918.
Combined Anesthesia. J. P. Fakehany.—p. 921.
Allergic Sensitivity to Sulfonamide Drugs. H. N. Holmes.—p. 923.
Idiopathic Hypertrophy and Dilatation of Esophagus. A. J. Mamilla. —p. 925.

41:977-1072 (Nov.) 1945

*Management of Rheumatic Infection. W. H. Bunn.—p. 1001.
Changing the Food Habits of Our People. Martha Koehne.—p. 1007.
Coach Leg. P. S. Ross and A. P. Ormond.—p. 1012.
Unusual Leg Ulcer with Diphtheroids. H. R. Hathaway.—p. 1014.
Bilateral Recurrent Laryngeal Paralysis (Bilateral Abductor Paralysis). J. W. McCall.—p. 1016.
*Effects of Encephalitis Occurring During Childhood on Behavior and Personality: Study of 50 Cases. J. V. Greenebaum, L. A. Lurie, B. Leichtentritt and Florence M. Rosenthal.—p. 1018.
Tuberculous Suprarenalitis. Virginia Congleton and R. J. Ritterhoff. —p. 1022.
An Eastern Doctor Visits Cincinnati. P. D. Jordan.—p. 1025.

Rheumatic Infection.—Scarlet fever or infection with the group A hemolytic streptococcus precedes by several days or longer an attack of rheumatic fever. This preliminary infection, which is designated as phase 1, is followed by a quiescent period, phase 2, which lasts from a few days to several weeks, during which an antigen-antibody reaction seems to occur. This is followed by true active rheumatic fever, phase 3, which results in a heart lesion in about three fourths of the children and in a considerable number of adults. Patients, particularly children, who recover slowly from a throat infection, especially if they are pale, perspire easily and have an evening rise of temperature, elevated white blood cell count, increase in pulse rate or accelerated sedimentation rate probably are in phase 2. It is in the hours before the activation of the streptococcus or the antigen-antibody reaction has occurred that salicylates or sulfonamides may be effective if given in moderately large doses. Although salicylates and sulfonamides are the choice drugs for the prevention of phase 1 lapsing into phase 2, penicillin may prove to be useful for patients who are sensitive to sulfonamides or who have been infected by a sulfonamide resistant organism. There is evidence that penicillin is not beneficial in the treatment of rheumatic fever; it may even be harmful. When chorea develops, phase 1 has passed so that prophylactic measures are then of no avail. From 3 to 10 per cent of patients with uncomplicated chorea develop rheumatic heart disease. Since recurrences are less likely in warm climates, patients who are in the latent stage of the disease should spend at least the first winter following an acute attack in the South and should live the rest of their lives in a warm climate if this can be arranged. Lacking this opportunity, a great deal can be done by warm clothing and avoidance of exposure to dampness, chilling and fatigue.

Encephalitis and Personality.—Greenebaum and his associates report observations on 50 children who were referred to the Child Guidance Home because of behavior disorders and personality difficulties which were found to be causally related to a previous attack of encephalitis. The patients were followed for from three to twenty-five years. The fact that there were 39 males and 11 females seems to indicate that males are more susceptible to this type of behavior and personality disorder than females. The onset of the disease was predominantly early in infancy, the bulk of the cases occurring before the age of 5 years. The onset of the behavior problems and personality changes occurred mostly below the age of 10 years. In the majority of the cases the behavior and personality difficulties appeared immediately after the onset of the disease. The virus type of encephalitis predominated in this series. Neurologic findings (pyramidal, extrapyramidal, ocular) were present in all but 9 cases. Five suffered from grand mal, 2 from petit mal and 4 presented parkinsonism. The intelligence quotient range was from 51 to 118. Only 14 were feebleminded. Of 20 children who were retested, 9 showed no change in the intelligence quotient, 1 improved and 10 deteriorated. The children can be grouped into three categories: those with behavior difficulties, the psychopathic and the psychotic. Only 9 of the 50 patients are at present adjusted.

Radiology, Syracuse, N. Y.

45:319-424 (Oct.) 1945

*Osteoid Osteoma of Bone. H. L. Jaffe.—p. 319.
*Use of Radioactive Sodium as Tracer in Study of Peripheral Vascular Disease. Beverly C. Smith and Edith H. Quimby.—p. 335.
Roentgen Appearance of Lobar and Segmental Collapse of Lung: VI. Collapse of Upper Lobes. L. L. Robbins and C. H. Hale.—p. 347.
Pantopaque Myelography: Correlation of Roentgenologic and Neurologic Findings. R. K. Arbuckle, C. H. Shelden and R. H. Pudenz.—p. 356.
Pantopaque Myelography for Protruded Disks of Lumbar Spine. M. T. Schnitker and G. T. Booth.—p. 370.
Beneficial Effects of Roentgen Therapy in Advanced Cases of Rheumatoid Arthritis: Preliminary Report. J. Borak and H. K. Taylor.—p. 377.
*Solitary Myeloma: Review of 61 Cases. L. T. Gootnick.—p. 385.
Volvulus of Megacolon Reduced During Barium Enema Examination. A. Melamed.—p. 392.

Osteoid Osteoma of Bone.—According to Jaffe an osteoid osteoma is a small, oval or roundish, nidus-like benign neoplasm of bone. It consists, in varying proportions, of osteoid trabeculae of newly formed osseous tissue and a substratum of vascularized osteogenic connective tissue. The lesion usually does not exceed a centimeter in its greatest dimension and may lie within the spongiosa (perhaps at or near an articular surface) or against the inner surface of the bone cortex, or even within the cortex. Though the nidus-like focus is the osteoid osteoma per se, the total abnormal area in the affected bone may be large, since there may be a perifocal zone of bone thickening or sclerosis extending for a considerable distance beyond the nidus. The author reviews observations on 62 cases. The condition is found chiefly in males, 42 of the 62 cases being in males and the age in all but 2 being less than 30. The roentgenographic picture of osteoid osteoma has two aspects, manifestation of the nidus or osteoid osteoma proper and that of the reaction which it has incited in the surrounding tissue. The nidus is a small, oval or roundish, relatively radiolucent or (less frequently) radiopaque area, often surrounded by a more or less opaque or dense shadow reflecting the reactively thickened or otherwise altered zone of neighboring bone. While persistent local pain and a sharply localized point of tenderness are useful in the diagnosis, it is the roentgenographic picture that constitutes the most valuable diagnostic guide. Removal of the lesion is followed by prompt and lasting disappearance of the complaints. Complete removal is important, since otherwise there may be recurrences. Five typical case histories are reported and illustrated with roentgenograms and photomicrographs.

Radioactive Sodium as Tracer in Peripheral Vascular Disease.—Smith and Quimby direct attention to the use of artificially radioactive elements as tracers in biologic and physiologic studies. Substances can be tagged by mixing with stable atoms a relatively small number of radioactive ones. The tagged atoms continue to be mingled with the normal ones administered at the same time in the same proportions throughout their whole course through the body except for radioactive decay, which can be allowed for if necessary. Radioactive sodium Na_{24} is such an isotope. Following its introduction into the body, its transfer by the blood and its arrival at any part can be observed by the use of a Geiger-Müller counter. The authors injected intravenously a few cubic centimeters of isotonic solution of sodium chloride containing the desired amount of the radioactive isotope and traced the circulation of the blood by following the sodium it carried. Studies of this type have now been carried out on more than 200 patients with peripheral vascular disease. The method provides a simple and objective means of determining the blood supply to an extremity through either the main arteries or the collateral circulation. The observations obtained by this method have been especially helpful in demonstrating the competence of the collateral circulation when the main arteries are partially or totally occluded. The method has been of special value in determining the advisability of persisting in conservative as compared to more radical local surgery, and particularly in determining the site of amputation at which healing might be expected. In this capacity it has justified the clinical attitude that in many cases of amputation for gangrene in peripheral vascular disease the knee joint can be saved. Since no toxic material is injected with the sodium, and the accompanying dose of radiation is considerably less than 1 roentgen for each test, there is no contraindication to its repetition at reasonable intervals. In this manner it serves to follow progress of the disease or to test the efficacy of therapeutic measures.

Solitary Myeloma.—The treatment and prognosis of multiple myeloma are usually regarded as extremely discouraging. In recent years numerous reports of solitary myeloma have appeared, in many of which x-ray therapy judiciously carried out delayed the progress of the disease, produced relief of symptoms and prolonged life. Gootnick says that, among 24 cases of myeloma seen in the University of Chicago Clinics, 2 examples of solitary lesions have been observed, both of which responded excellently to x-ray therapy. These 2 cases, together with 59 similar cases of solitary myeloma collected from the literature, were studied with regard to the duration of life, the effects of x-ray treatment and the course of the disease as compared to that of multiple myeloma. The diagnosis in all these cases had been confirmed by biopsy and microscopic examination. The x-ray appearance is of two main types. One type appears as a cystic, trabeculated lesion closely resembling giant cell tumor. The second is a frankly osteolytic lesion closely resembling metastatic carcinoma. The incidence of the disease was highest in the 50 to 60 year age group, in which 26 cases were found. Males were predominantly affected, accounting for 41 cases. The ilium, femur, humerus and thoracic vertebrae were the sites most frequently involved. Bence Jones protein was found initially in only 10 per cent of the 41 cases tested. X-ray therapy following biopsy or curettage was carried out in 43 cases and appears to be the treatment of choice. It gave relief of pain and prolonged life several years beyond the average for multiple myeloma. The average duration of life in the treated cases followed until death was seven years from the onset of symptoms and three years and a half from the original admission.

Rocky Mountain Medical Journal, Denver

42:641-728 (Sept.) 1945

Prepayment Medical Care Plans: Experience of Michigan State Medical Society. L. F. Foster.—p. 657.
Factors Influencing Prognosis in Acute Perforated Peptic Ulcer Based on Review of 59 Consecutive Cases at Colorado General Hospital. R. H. Anderson, G. L. Allen and G. B. Packard.—p. 661.
Current Views on Diagnosis and Treatment of Vitamin Deficiencies. M. M. Wintrobe.—p. 665.
Tuberculosis Case Finding in El Paso County. E. N. Chapman.—p. 670.
Carcinoma of Breast: Study of 37 Cases. G. B. Kent and K. C. Sawyer.—p. 672.

1:729-816 (Oct.) 1945

Michigan Plan. G. A. Unfug.—p. 745.
Michigan's Experience with Commercial Medical Radio Broadcasting. A. S. Brunk.—p. 753.
Progressive Public Relations by a State Medical Society. E. F. Sladek.—p. 754.
Discussion on Planning Panel. P. L. Ledwidge.—p. 756.

be sufficient justification for making an attempt at surgical treatment of these patients. The most important diagnostic sign of ing this opportunity, a great deal can be done by warm clothing and avoidance of exposure to dampness, chilling and fatigue.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2:451-484 (Oct. 6) 1945

Arterial Aneurysm Following Injury to Iliac Vessels: Report of 2 Cases, with Commentary on Large Transfusions. H. Agar, J. Rowlands and W. H. Ogilvie.—p. 452.
Cutaneous Schistosomiasis Involving S. Hematobium Eggs. K. O. Black. —p. 453.
Methods for Determining Plasma Proteins: Value in Group of Boys Aged 14 to 15. R. P. Cook, D. M. Keay and D. G. McIntosh.—p. 456.
Early Treatment of Bell's Palsy. H. P. Pickerell and C. M. Pickerell. —p. 457.
Osteomyelitis of Skull Due to Salmonella Typhi. J. M. Lever, G. B. Barker.—p. 459.

2:485-520 (Oct. 13) 1945

Influence of Galvanic Stimulation on Muscle Atrophy Resulting from Denervation. E. C. S. Jackson and H. J. Seddon.—p. 485.
Changes in Human Voluntary Muscle in Denervation and Reinnervation. R. E. M. Bowden.—p. 487.
Value of Supplements of Vitamin C in Preventing Lactational Mastitis. A. A. Fulton.—p. 488.
Acute Idiopathic Porphyria. G. Discombe and J. L. D'Silva.—p. 491.
*Simmonds's Disease Due to Postpartum Necrosis of Anterior Pituitary: Carcinoma of Stomach. R. T. Cooke.—p. 493.
Hemolytic Disease and Congenital Syphilis in Siblings: Role of Rh Factor. Marjory N. McFarlane.—p. 494.
Glandular Fever with Neutropenia. G. Slot and F. D. Hart.—p. 495.

Simmonds's Disease.—The patient observed by Cooke, a woman aged 59 with increased fatigue and loss of weight for a period of a year, anorexia and numbness of the fingers since an attack of influenza in 1942, and epigastric pain, had had four pregnancies. At the birth of the last child, when the patient was 32, there was a severe hemorrhage and she was in bed seven weeks because of weakness. After the delivery she did not lactate, and the breasts became very small. Menstruation ceased at age 33. Loss of hair was soon noticed (especially axillary and pubic), and the patient gained weight. There developed sensitivity to cold, becoming more pronounced during the last year. At examination she presented the picture of cachexia. An insulin sensitivity test gave further evidence of a lesion of the anterior hypophysis. Urinary 17-ketosteroid assay added weight to this diagnosis. The patient was given no specific treatment and slowly weakened and died of cachexia and heart failure. Necropsy revealed a general splanchnomicria and an "early" pyloric carcinoma, which was not expected. It is problematic whether this was a coincidence or another result of the pituitary lesion.

Journal of Laryngology and Otology, London

60:43-90 (Feb.) 1945

Otogenic Brain Abscess. C. A. Hutchinson.—p. 43.
Unusual Intracranial Complications of Otitic Origin: Report of 3 Cases. E. G. Collins.—p. 56.
Low Voltage Galvanization in Sinusitis. E. Kupfer.—p. 68.

Journal Obst. & Gynaec. of Brit. Empire, Manchester

52:313-416 (Aug.) 1945

Placenta Previa: Study of 174 Cases. C. H. G. Macafee.—p. 313.
Influence of Minor Degrees of Failure of Fusion of Müllerian Ducts on Pregnancy and Labor. S. Way.—p. 325.
Effects of Injection of Human Semen into Female Animals. P. Bacsich, A. Sharman and G. M. Wyburn.—p. 334.
Influence of Social and Economic Factors on Stillbirths and Neonatal Deaths. D. Baird.—p. 339.
*Recurrence Rate of Urethral Caruncles P. Malpas.—p. 367.
Granulosa Cell Tumor of Tubular and Adenomatous Type. D. Dougal. —p. 370.
Chemotherapy in Obstetrics and Gynecology. M. Kenny.—p. 372.

Recurrence Rate of Urethral Caruncles.—Malpas reviewed 85 cases of urethral caruncle which had been treated over a period of fifteen years. Excision of the caruncle and of the caruncle bearing area on the posterior lip of the urinary meatus was the procedure adopted in 68 cases. In 22 of these cases the caruncle returned, in 18 instances once, in 2 instances twice, in another three times, in another four times. This seems to indicate that recurrence of a caruncle will follow excision in about one third of the cases so treated. The presence and treatment of an associated lesion such as infection or prolapse did not seem to have any bearing on the incidence of recurrence. The period of recurrence ranged between one and fifteen years, more than half occurring within five years. Recurrence was not seen in any of 15 cases treated by coagulation diathermy. This seems to indicate that coagulation diathermy is a more suitable method than excision. It is possible that the fibrosis following the coagulation inactivates the caruncle bearing area of the posterior meatal lip. An electrocautery was used to burn off the caruncle base after excision in 6 cases, but recurrence occurred in 3 of these. The effect of a cautery apparently is not deep enough to prove effective. Radium was used experimentally in 3 cases. The radiosensitivity of a caruncle is not greater than that of the normal urethral mucosa and as a primary method of treatment it is not advisable, though it has a limited scope in the treatment of recurrent caruncle.

Medical Journal of Australia, Sydney

2:293-324 (Sept. 8) 1945

Observations on Prevention and Treatment of Tuberculosis. H. Roche. —p. 293.
Clinical Aspects of Tuberculosis. H. Roche.—p. 299.
*Tuberculous Lung Cavity and Monaldi's Closed Suction Drainage. H. Roche.—p. 307.

Tuberculous Cavity and Monaldi's Suction Drainage.—Roche believes that Monaldi's closed suction method has a definite though limited place in the treatment of pulmonary tuberculosis. In some large cavities its use will make more certain the success of thoracoplasty and diminish the risk of postoperative spread. Occasionally the treated cavity will close and remain healed. If means can be found to produce permanent occlusion of the draining bronchi, suction drainage will have a wider field of successful application and subsequent thoracoplasty will be avoided in many cases. Its use has provided a clearer understanding of the pathogenesis and healing of cavities.

Transactions Royal Soc. Trop. Med. and Hyg., London

39:1-90 (Sept.) 1945

Tsetse Fly Control and Sleeping Sickness in Sudan. A. R. Hunt and J. F. E. Bloss.—p. 43.
Meridi Outbreak of Sleeping Sickness. J. F. E. Bloss.—p. 59.
Vincent's Infection in Northern Peru. K. V. Earle.—p. 77.
Spinal Anesthesia in Treatment of Tropical Ulcers. E. W. Price.—p. 83.
Staining Method for Malaria Parasites in Thick Blood Films. J. C. B. Fenton and J. Innes.—p. 87.

Confinia Neurologica, Basel

6:1-56 (No. 1) 1944

Nosographic Limits of Cerebrotrigeminal Angiomatosis (Sturge-Weber-Krabbe). Denise Louis-Bar.—p. 1.
*Cerebral Metastases of Ovarian Struma. L. de Bakay Jr. and T. de Lehoczky.—p. 22.
Study of Neuralgia of Glossopharyngeal Nerve with Regard to Part Played by Age, Sex and Localization. M. Schachter.—p. 32.
Pathophysiology of Vegetative Functions and Their Relationship to Psychopathology. F. Georgi.—p. 37.

Cerebral Metastases of Ovarian Struma.—Cerebral metastases of ovarian struma in a woman aged 57 were observed by de Bakay and de Lehoczky. A dermoid cyst containing thyroid tissue was removed from the ovary of the patient. Six to eight years after this operation there appeared indistinct symptoms such as fatigue and a slight gait disturbance; later hyperthyreosis and signs of a supratentorial neoplasm appeared. Mental disturbances appeared at the same time. A gradually developing left side hemiparesis and bilateral papilledema with punctiform hemorrhages were observed in the absence of sensory disturbance. These symptoms suggested a frontoparietal tumor on the right side. When ventriculography was attempted, two incisions in the occipital region revealed a small neoplasm in the occipital bone. It consisted of thyroid tissue and was considered as a metastasis of the previous ovarian struma. This concept was supported by the identical microscopic structure of the ovarian struma and the bone tumor. The case differed from instances presenting the usual syndrome of metastatic brain tumor in that bilateral pyramidal symptoms and impairment

of consciousness were observed as late as two weeks prior to death. It is probable that there was another tumor in the right frontoparietal region, a metastasis such as that found in the occipital bone.

Revista Chilena de Pediatría, Santiago

16:745-815 (Aug.) 1945. **Partial Index**

*Penicillin in Congenital Syphilis in Infants. J. Meneghello, J. Rosselot and O. Undurraga.—p. 784.

Penicillin in Congenital Syphilis.—Meneghello and his collaborators administered penicillin to 3 infants aged 8, 3 and 6 weeks with congenital syphilis. The clinical and roentgen diagnosis was verified by the Kahn serologic test. Two of the patients had acute glomerulonephritis with anasarca and venous hypertension. The drug was administered intramuscularly every three hours, with the total dose between 30,000 and 50,000 Oxford units for each kilogram of body weight. Clinical, roentgenologic and serologic cure was obtained in all cases. The renal disease also was controlled. Penicillin in adequate doses is harmless and effective in the treatment of congenital syphilis of infants.

Acta Medica Scandinavica, Stockholm

121:1-113 (May 14) 1945. **Partial Index**

*Hematologic Studies in Tuberculosis: Variations in Blood Cells of Guinea Pigs Inoculated Intracutaneously or Percutaneously with BCG Vaccine. K. Birkhaug and H. Schjelderup.—p. 1.
Effect of Insulin Coma and Awakening from It on Amino Acid-N in Plasma. C. Trolle.—p. 19.
Duration of Life of Erythrocytes in Hemolytic Jaundice Determined Through Transfusion Experiments. A. Kirkegaard and Gertrud Kirkegaard.—p. 24.
Intermittent Claudication and Vascular Spasm: I. Is Vascular Spasm a Contributory Cause of Intermittent Claudication in Patients with Structural Disease of Arteries? T. Lindquist.—p. 32.
Contribution to Pathogenesis of Amyotrophic Lateral Sclerosis. E. Ask-Upmark.—p. 49.
On Hereditary and Familial Conditions in Gastric Ulcers and Duodenal Ulcers. T. Sällström.—p. 57.
"Alcacid Reaction": New Qualitive Test for Serum Globulins: Preliminary Report. J. Waldenström.—p. 68.
*Polyneuritis Following Sulfanilamide Therapy. R. Müller.—p. 95.

Hematology in Tuberculosis.—Birkhaug and Schjelderup report a hematologic study on comparable groups of normal and tuberculin negative guinea pigs immunized with BCG by Rosenthal's multiple puncture, Weill Hallé's scarification and Wallgren's intracutaneous vaccination methods. Fifty-eight days after vaccination, when all the animals had become allergic, all of the vaccinated animals and the control group were inoculated intraperitoneally with 0.0001 mg. of a highly virulent strain of human tubercle bacilli. The intracutaneous tuberculin test with 10 mg. of tuberculin was performed on the vaccinated animals and on the control group. By comparing the control group tuberculin reactions with the immunized group reactions it appeared that the tuberculous infection developed more slowly in the multiple puncture group, a little more rapidly in the intracutaneous group and still more rapidly in the scarified group. All the surviving animals were killed 103 to 110 days after the inoculation with the virulent strain. The macroscopic scoring of the tuberculous involvement in the vaccinated and in the control animals and the exact quantitative assessment of the volume and weight of the individual organs and glands demonstrated that the multiple puncture group presented the smallest degree of tuberculous lesions, the scarification and intracutaneous groups presented a higher degree, while the control group showed much greater spread of tuberculous lesions than the BCG immunized groups. The nonvaccinated and similarly infected control guinea pigs showed that significant abnormal deviations in monocytes, monocyte-lymphocyte ratio and leukocytic index of neutrophils, lymphocytes, monocytes and total white cells register most accurately the advancing tuberculous disease. The blood picture in the animals immunized with BCG parenterally and superinfected with virulent tubercle bacilli revealed a significantly retarded abnormal deviation in the monocytes, monocyte-lymphocyte ratio and leukocytic index. The multiple puncture BCG vaccination method, however, produced a slightly more retarded abnormal blood picture than the scarification and intracutaneous BCG vaccination methods. In the same group of animals the hematologic study substantiates the pathologic data that parenteral BCG vaccination produces considerable resistance against a virulent tuberculous infection.

Polyneuritis from Sulfanilamide.—Müller reports 7 cases of polyneuritis following chemotherapy in 2 women and 5 men. The patients, who were admitted to the neurologic clinic of the Serafim Hospital in Stockholm, were between the ages of 3 and 56 years. Two of them were treated with sulfanilyldimethylsulfanilamide (uleron), 1 with sulfanilamide, 2 with sulfathiazole, 1 with sulfanilamide, sulfapyridine and sulfathiazole and 1 with sulfapyridine. In the cases of polyneuritis caused by sulfanilamide, sulfapyridine and sulfathiazole the symptoms were more extensive and more pronounced than in the cases caused by sulfanilyldimethylsulfanilamide and sulfamethylthiazole. In addition there was less motor disturbance than in polyneuritis caused by sulfanilyldimethylsulfanilamide and sulfamethylthiazole. The incidence of polyneuritis is probably greater after treatment with sulfanilyldimethylsulfanilamide and sulfamethylthiazole than with the administration of other nonmethylated sulfanilamide compounds. The possibility that in some cases polyneuritis may result from a purely toxic damage to the nerve tissues cannot be excluded. In general, an allergic reaction seems to be responsible for its occurrence, as polyneuritis may result from serum administration. Previous damage to the nervous system, achylia and thiamine deficiency may be predisposing factors which render the patient susceptible to polyneuritis. Muscular exertion may cause a latent polyneuritis to become manifest. To prevent the occurrence of polyneuritis, chemotherapy should be practiced for as short a period as possible. Intermittent administration of the drug should be avoided. Methylated preparations should not be employed. Patients who on the occasion of previous treatment presented signs of hypersensitivity such as drug fever or exanthems should be desensitized before repeating chemotherapy. Polyneuritis due to sulfonamide administration suggests that further chemotherapy should not be employed.

122:1-103 (Aug. 9) 1945. **Partial Index**

Fiedler's Myocarditis: Infectious Myocarditis. K. Wassmann.—p. 1.
*Toxic Diffuse Goiter Developing After Treatment with Thyroid Preparations. E. Bruun.—p. 13.
Cyanosis. L. Noro.—p. 30.
Determination of Vitamin B_1 in Blood from Healthy and Diseased Persons: Phycomyces Method. H. O. Bang.—p. 38.
Acute and Subacute Hemolytic Anemia of Unknown Origin (Type Lederer): Report and Discussion of 3 Cases. E. Roelsen and A. Søeborg Ohlsen.—p. 60.
Nine Cases of Toxic Diffuse Goiter Developed in Connection with Thyroid Gland Therapy. P. Lous.—p. 83.
Diaphragm Contractions Synchronizing with Heart Movements. N. Söderström.—p. 95.

Toxic Diffuse Goiter After Thyroid Treatment.—Bruun reports 18 cases of thyrotoxicosis developing in patients who were receiving thyroid preparations. In the same period a total of 485 patients were treated for thyrotoxicosis. It appears therefore that patients with thyrotoxicosis due to thyroid therapy represent 3.7 per cent of the total number of patients with this condition. All the 18 patients were women, 10 of them in the climacteric age group. In 11 of the 18 cases the thyroid treatment was instituted for simple obesity. Three of the 18 patients showed a familial disposition to toxic diffuse goiter since among their nearest relatives unquestionable instances of this condition were ascertained. Two of the 18 patients had a simple goiter prior to the thyroid treatment, and 3 had hypothyroidism. Thus, disposition to thyroid disease could be demonstrated in 8 patients. Pronounced unilateral exophthalmos was found in 4 patients. Since this symptom has been described also in 3 of the previously reported 28 cases of toxic diffuse goiter after thyroid therapy, pronounced unilateral exophthalmos in patients with thyrotoxicosis should raise suspicion of a preceding treatment with thyroid substance. In Denmark the yearly consumption of thyroid preparations amounts to 6,600,000 tablets (1 tablet = 100 thyroid units). This is calculated roughly to be at least five times greater than the amount required by the myxedema patients living in this country. The greater part of the thyroid preparations is probably consumed by other patients, chiefly by those with obesity. Thyroid therapy in obesity always entails a certain risk and is therefore once more condemned.

Book Notices

A Primer of Electrocardiography. By George Burch, M.D., F.A.C.P., Associate Professor of Medicine, Tulane University School of Medicine, New Orleans, Louisiana, and Travis Winsor, M.D., Instructor in Medicine, Tulane University School of Medicine. Cloth. Price, $3.50. Pp. 215, with 235 illustrations. Philadelphia: Lea & Febiger, 1945.

This book differs from other recently published books on electrocardiography in that it is more concerned with the basic principles and concepts of electrocardiographic interpretation than with exhaustive description of empirical findings. If used in conjunction with other monographs on the subject, as the authors recommend, it will fulfil its purpose and offer the reader a concise outline of the theory of electrocardiography, mainly as formulated by F. N. Wilson and his co-workers and elaborated by Richard Ashman, R. H. Bailey and their co-workers. The more recent contributions of these authors, like those dealing with the ventricular gradient, are incorporated.

The particular approach of the authors may explain why certain problems are not dealt with although they are of utmost practical importance; thus the variety of the patterns of left heart strain is not discussed and the importance of the chest leads for the diagnosis of left heart strain is neither stressed nor illustrated. We cannot agree with the statement that the electrocardiographic picture of acute massive pulmonary embolism lasts only a few hours; in our experience the changes may persist for many days or even weeks. The misleading terms of complete, incomplete and partial bundle branch block, if used, should be defined as being purely electrocardiographic and not anatomic or physiologic. Exception can be taken to the presentation of some problems in the chapter on disorders of the heart beat. No mention is made of the importance of excluding nonconducted auricular premature systoles before diagnosing sinoauricular block. The authors do not mention that in sinoauricular block the pause may be less than two normal cycles. They discuss ventricular escape but do not mention nodal escape with aberrant ventricular conduction; the only kind of septal premature beats that can be diagnosed, namely those occurring in the presence of bundle branch block, is not mentioned. A number of conditions other than premature beats and auriculoventricular block responsible for bigeminal rhythm are not discussed. In describing parasystole the authors fail to name its principal feature, the varying coupling of the premature beats. The mechanism of dissociation is not sufficiently explained; nothing is said about its occurrence in the presence of partial block.

The importance of multiple chest leads for the recognition of myocardial infarction is well demonstrated and we can fully subscribe to the statement that "there is a greater need to take the term exploring electrode literally and really to explore the various regions of the heart in order to locate precisely the site of infarction and to estimate its size."

Essentials of Histology. By Margaret M. Hoskins, Ph.D., and Gerrit Bevelander, Ph.D. Cloth. Price, $3.50. Pp. 240, with 137 illustrations. St. Louis: C. V. Mosby Company, 1945.

This book was originally published as Hoskins and Bevelander's Outline of Histology. Its purpose is to describe for the student the most important morphologic characteristics of the tissues and organs, leaving to the individual teacher the task of building on this foundation "such superstructure of detail and theoretical material as the conditions of his course permit." The result is simply an enumeration of morphologic data. Lacking are the functional correlations and developmental relationships which make the material come to life. Whether or not such a book fulfils a need depends on the character of the course in histology. In general, for medical students, more will be required. Certain improvements have been made in the original Outline of Histology. The illustrations are better and are labeled in more detail; several new ones have been added. The section on dental histology, which constituted the whole second part of the outline, has been much shortened. The present work includes new sections on the brain and on the general sense organs, and a separate chapter on glands. Not many teachers in American medical schools will be satisfied that this book contains the "essentials of histology."

The Cerebrospinal Fluid Total Protein in the Psychoses. Studies from the Central State Hospital, Indianapolis, Indiana. Vol. 10. Max A. Bahr, M.D., Superintendent, Walter L. Bruetsch, M.D., Clinical Director. [Collected Reprints.] Cloth. Various pagination. Indianapolis, Indiana: Central State Hospital, 1942.

This is not a real monograph. Three papers, one by Bruetsch, Bahr, Dieter and Skobba, the other by Bruetsch, Bahr, Skobba and Dieter and a book review by Bruetsch have been bound together. These papers are all related to the subject indicated by the title. The contents of the first two papers are rather repetitious and the book review has little bearing on the question. The only value of the contribution is that a systematic report on the spinal fluid findings of all the patients newly admitted to the Central State Hospital has been made. This included 2,823 examinations and excludes the syphilitic psychoses. The patients were admitted during a ten year period from 1930 to 1940. An increase in the spinal fluid protein was found in 5 per cent of the male and 3.2 per cent of the female patients suffering from dementia precox, 5.2 and 3.8 per cent respectively of the manic-depressive group, 4.9 and 4.7 per cent of the involutional psychoses, 25.4 and 16.2 per cent of the cerebral arteriosclerotic and finally 12.7 and 2.9 per cent of the senile psychotic. The theory of the reasons for these findings is discussed in some detail but no strikingly new conclusions are reached. The work conceivably would have more weight and be more convincing had a comparison been made between the findings in these and in 3,000 normal persons. It is factual that the Pandy test and the total protein may easily be misinterpreted, because even a normal spinal fluid may seem to show an increase in protein. This may be due to the manner in which the spinal puncture is performed. If the needle is inserted too far and the venous plexus on the anterior wall of the spinal canal is irritated, an increase of protein may result. This is not a matter of disease but rather a result of the method of obtaining the fluid. Psychotic men are generally much more resistive than psychotic women. Perhaps this explains the striking difference in the findings between the sexes.

Fractures & Orthopaedic Surgery for Nurses and Masseuses. By Arthur Naylor, Ch.M., M.B., M.Sc., Resident Surgical Officer, Westwood E. M. S. Hospital, Bradford, England. Foreword by Ernest Finch, M.D., M.S., F.R.C.S., Professor of Surgery, University of Sheffield, Sheffield, England. Cloth. Price, $5. Pp. 288, with 243 illustrations. Baltimore: William Wood & Company, 1945.

The author has written this book to help those who devote themselves to the nursing of traumatic and orthopedic cases. The success of orthopedic surgery is dependent on the knowledge, skill and care of the nurses and physical therapists to whom after-care and treatment is delegated. With the present crowded curriculum, the student nurse has often only a bare minimum of instruction in orthopedic surgery. In spite of this about one fifth of her surgical work will be concerned with this specialty. This book is written to show the nurse how the principles are applied in orthopedic surgery and as a supplement to her lectures in surgery. The author emphasizes the three essentials of treatment, prevention of deformity, correction of deformity and maintenance of correction; "the greatest of these" is prevention.

Orthopedic surgery must be distinguished from cults such as osteopathy and chiropractic surgery. Osteopathy is based on the theory that structural defects of the body are the predisposing cause of disease, and treatment is directed primarily to the rectification of these by manipulative methods. It must be added, however, that no one has demonstrated the alleged structural defect or subluxation either by roentgenograms or at postmortem examination. Chiropractic treatment postulates that displacements of the vertebrae produce pressure on the nerves and prevent the free flow of the "nerve force" which is essential for the well-being of the body. These "displacements" are corrected by manipulation without anesthesia. Again, radiology and pathology fail to substantiate the presence of the alleged lesions.

Operative measures should be regarded as incidents and not as the essential part of a long-term plan of treatment, while attention to minute details is essential to a successful outcome. Rehabilitation is the mechanism of placing the patient in a position to pursue his former or equivalent occupation by means of surgery, nursing, physical therapy and psychologic treatment and

requires co-operation between surgeon, nurse, masseuse, patient and employer. The book contains chapters on orthopedic apparatus, operating room technic, methods of correction of deformity, amputations, fractures and dislocations, diseases of bones and joints, diseases of joints, disorders of the soft tissues, congenital deformities, disorders of the epiphyses, peripheral vascular lesions, paralyses and disorders of the spine and foot.

Careers in Safety: Choosing a Vocation in the Field of Accident Prevention. By Herbert J. Stack, Ph.D., Director, Charles C. Hawkins, Ph.D., Research Associate, and Walter A. Cutter, Ph.D., Administrative Assistant, Center for Safety Education, New York University, New York. Kitson Careers Series, edited by Harry D. Kitson, Ph.D. Cloth. Price, $1.50. Pp. 152. New York & London: Funk and Wagnalls Company, 1945.

This book is useful in vocational guidance. It describes the work of promoting safety and discusses in some detail the work of the safety engineer, control of automobile traffic, principles in safety education, industrial hygiene and occupational diseases, principles in private safety organizations and in the insurance business, working with government agencies and accident prevention in the armed forces. It has a chapter on getting along with people and a closing chapter somewhat in the nature of a sales talk which deals with the challenge of careers in safety. There is an index to jobs in safety which refers back to the preceding context and does not, as might be supposed, actually list jobs. The book is documented with references for the several chapters. For the vocational counselor this should be an interesting and worth while production.

The Dietary of Health and Disease. By Gertrude I. Thomas, Assistant Professor of Dietetics, University of Minnesota, Minneapolis, Minn. Fourth edition. Cloth. Price, $3.50. Pp. 308, with 10 illustrations. Philadelphia: Lea & Febiger, 1945.

The fourth edition of this textbook on nutrition for nurses includes the most recent scientific contributions in this field, particularly in the rapidly developing work on vitamin and protein nutrition. The author gives sufficient information on each subject to provide the reader with a substantial understanding but does not burden with details. Perhaps for this reason an unusually extensive coverage of the many topics related to preventive and therapeutic nutrition could be made. The style of presentation is on a high scientific level, with discussion supported by facts and figures. The number of recipes given is excessive for a textbook, however. The arrangement of the material may be open to some criticism, since a better separation might have been made under the headings of fundamentals, foods and dietary management of the sick. The information given under all chapters is aimed at being practical. Under discussion of vitamins a commendably clear distinction is made between those of proved value in human as compared to animal nutrition. In general only the highlights of special dietetic therapy are given, as should be in a book of this type, although the details for the diabetic regimen are rather extensive. The information given for diet in skin conditions could well be omitted. The volume can readily be recommended as a reliable nutrition textbook for nurses, particularly as one of lasting usefulness because of the practical information and numerous tables contained in it.

Everyday Psychiatry: Concise, Clinical, Practical. By John D. Campbell, M.D., Commander, M.C., U.S.N.R. Designed for Practitioners and Students. Fabrikoid. Price, $6. Pp. 333. Philadelphia, London & Montreal: J. B. Lippincott Company, 1945.

The author sets out to present psychiatry to practicing physicians, medical students and social workers through a systematic approach of borderline mental conditions which constitute the bulk of every specialist's practice rather than by lengthy accounts of the rarer and relatively hopeless psychotic. But on page 3 he explodes the following bomb: "The essence of this work is that human nature expresses itself through four basic personality traits and two secondary personality factors. Environment, which has been overemphasized in psychiatry, is the medium in which the basic personality factors react. These traits are inherited, constitutional and immutable and are not subject to change by environment, education or training. The four basic personality factors are intelligence, conscience, emotional reaction and psychosexual development." Then "Secondary to these four basic personality attributes are two other factors which are not directly inherited and constitutional but develop as a corollary of, or as a compensation for, any deficiency or overdevelopment of the basic traits. These secondary characteristics are sociability and special modes of adjustment." Later the author juggles intelligence, conscience, emotional stability and psychosexual development in percentages to indicate the various innumerable potential personality types as the basic traits combined in infinite permutations. The resultant personality type is immutable. Such are the basic concepts from which our general practitioners are to understand the everyday problems of human nature in health and sickness! A more reactionary backward basis in these days of progressive dynamic psychiatry cannot be conceived. This book is a powerful example of the difficulty in creating badly needed psychiatric knowledge among medical students and doctors. The articulate members of the psychiatric speciality plunge backward; those who have much to offer are too busy doing research, teaching and caring for patients to write the sorely needed textbooks.

Organic Chemistry with Applications to Pharmacy and Medicine. By Eldin V. Lynn, Ph.D., Professor of Chemistry, Massachusetts College of Pharmacy, Boston. Second edition. Cloth. Price, $4.50. Pp. 355. Philadelphia: Lea & Febiger, 1945.

This textbook follows the traditional plan of organization but, in addition, includes discussion of special compounds of interest to pharmacy and medicine and emphasizes those usually discussed by the abbreviations U. S. P., N. F. or N. N. R. Although the book adequately fulfils its special function in applying organic chemistry to pharmacy, it leaves much to be desired as a textbook of organic chemistry for premedical students when compared with other recent volumes, for numerous opportunities to relate organic materials to medicine are neglected. Mention of the relation of compounds and reactions to specific roles in medicine or metabolism are unfortunately omitted in many cases. Vitamins are discussed in various sections rather than as a group of compounds of importance to organisms. The questions at the end of each chapter are a desirable supplement. However, one desirable feature of brief textbooks, the inclusion of supplementary references to other books and the current literature, is confined to only one page at the end of the book. Conditions of a reaction so important in organic chemistry would be better emphasized if the chemical equations included one or two of the more important conditions as is done in other textbooks.

Our Inner Conflicts: A Constructive Theory of Neurosis. By Karen Horney, M.D. Cloth. Price, $3. Pp. 250. New York: W. W. Norton & Company, Inc., 1945.

The physician who has of recent years become more and more aware of the importance of psychopathology in medicine is bound to have been impressed with the fact that the extremist of the anatomic wing has little to contribute to psychopathology. He must also have felt that it is the anthropologist, the sociologist, the psychologist and the biologist who have the most influence on psychiatry and that the descriptive, impressionistic approach to medicopsychologic problems has seen its day. There is a great deal that is interesting, sparkling and philosophically even inspiring in many a page of Jung, Adler, Wilhelm Reich or Karen Horney but there is little that the psychologic therapist can actually learn from them. Karen Horney's latest contribution to her divergences from Freud, like her previous ones, is written with emphasis and serenity, if not clarity; it makes pleasant reading but it reveals little of the psychobiologic nature of man and of the ways and means to treat and influence that which is psychopathologic.

Heintz. By Alan Lake Chidsey. Cloth. Price, $1. Pp. 135, with illustrations by F. Moylan Fitts. Kingsport, Tennessee: Southern Publishers, Inc., 1945.

In every way the desk soldiers get a pretty thorough going over by the humorists. Heintz did his service in the War Department. Col. Francis M. Fitts, who provides the illustrations, worked with the author; together they found a good deal of fun in the job of soldiering in Washington. Physicians who have met Dr. Fitts in his conduct of the medical aspects of the Army Specialized Training Program know that he brings to the project a considerable artistic talent, and they will enjoy this book.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

ADMINISTRATION OF IRON BY PARENTERAL INJECTION

To the Editor:—**In the June 1, 1940 issue of The Journal, in an article on the therapy of anemia, page 2207, it is stated that iron by injection is useless and even toxic. Several years before I discontinued the use of iron by the parenteral route in hypochromic anemia, preferring liver extract when it became available. In *Hospitalstidende* (May 19, 1944, p. 927) Sven Dahl comments favorably on the effectiveness of iron intravenously as well as intramuscularly. Would you explain this apparent paradox?**

W. A. W. Switzer, M.D., Ridgway, Pa.

ANSWER.—There can be no doubt about the fact that parenterally administered iron is therapeutically effective in the treatment of hypochromic anemias. Available evidence indicates that all of the injected iron is utilized by these patients and converted into hemoglobin. At the same same time the parenteral administration if iron is not practical because it frequently is attended by severe toxic reactions.

The toxic manifestations include nasal stuffiness, edema of the face and tongue, inflammation of the conjunctivas with blurring of vision, paresthesias, palpitation, nausea, vomiting, transient fall in blood pressure often to an alarming degree, chills and fever, and a profound sense of weakness. Frequently the vein into which injection is made becomes thrombosed. Goetsch, Moore and Minnich (*Blood,* January 1946) describe these reactions in considerable detail; they used colloidal ferric hydroxide or colloidal ferric oxide for their studies. The severity of the toxic manifestations was dependent to some degree on the amount of iron given and the speed of injection; but some patients experienced undesirable effects after only 15 or 20 mg. Similar but milder reactions were observed by Heath, Strauss and Castle (*J. Clin. Investigation* **11**:1293 [Nov.] 1932) following the intramuscular injection of 6 to 32 mg. of iron as iron citrate green. Ferrous ascorbate may possibly be better tolerated than are the other preparations mentioned, but it too produces toxic changes when administered in large enough doses to be therapeutically effective.

The following calculations serve to illustrate how much iron must be injected to correct an anemia: This is often not appreciated. If a woman with hypochromic anemia has an initial hemoglobin level of 8 Gm. per hundred cubic centimeters and it is assumed that her normal hemoglobin value is 13 Gm., then her hemoglobin must be increased by 5 Gm. per hundred cubic centimeters of blood. If her total circulating blood volume, furthermore, is assumed to be 5,000 cc., there must be a total increase of 250 Gm. of circulating hemoglobin. Since hemoglobin contains approximately 0.334 per cent of iron, 835 mg. of iron is necessary to bring about this much hemoglobin formation. Twenty-four injections would be required if 30 mg. of elemental iron should be given at each administration. Goetsch and her associates did succeed in giving this total amount of iron (as much as 1,400 mg.) at one single injection by intravenous drip to patients with hypochromic anemia. Dramatic reticulocyte responses were obtained and the rate of hemoglobin regeneration was as rapid as 0.27 Gm. per hundred cubic centimeters daily, but the reactions were so severe as to be alarming and in several patients the systolic blood pressure fell as low as 50 mm. of mercury.

It is conceded that an occasional patient cannot tolerate iron salts by mouth. This is particularly true for persons with ulcerative colitis or for patients on whom a colostomy or ileostomy has been performed. Under these circumstances, however, iron may safely be given by transfusion. Until less toxic iron preparations are found for parenteral injection, it is certainly true in general that transfusion is the safest and best way to administer iron parenterally.

THE BLOOD OF GORILLAS

To the Editor:—**In a recent fiction magazine there was an article which stated that gorilla blood has the same types as human blood. How closely does gorilla blood resemble that of man?**

M.D., Pennsylvania.

ANSWER.—There has been only one complete study of the blood group factors in gorillas (Wiener, A. S.; Candela, P. B., and Goss, L. J.: Blood Group Factors in the Blood, Organs and Secretions of Primates, *J. Immunol.* **45**:229 [Nov.] 1942), and this showed that the blood of gorillas differs in many respects from human blood. This study was limited to two live gorillas and one dead gorilla; saliva was obtained from all three, blood only from the dead gorilla—for obvious reasons. There are species specific differences between gorilla blood and human blood, so that human serum may contain natural heteroagglutinins capable of clumping gorilla blood, and vice versa. With regard to the blood groups, the red cells of the gorilla tested failed to clump in either anti-A or anti-B serum, but the gorilla serum contained only anti-A and not anti-B agglutinins. The reason for this apparent paradox was revealed by tests on the saliva, which showed the presence of B-like antigens. Apparently, the gorillas tested all belonged to group B, but the B factor was present in appreciable amounts only in the organs and secretions and not in the red cells. In subsequent tests on urine from fifteen gorillas (Candela, P. B., cited by Wiener, A. S.: Blood Groups and Transfusion, ed. 3, Springfield, Ill., Charles C Thomas, 1943, p. 334) it was found that thirteen lowland gorillas all belonged to group B, while two mountain gorillas both belonged to group A.

TOXICITY OF DDT

To the Editor:—**Have any symptoms been reported in workers engaged in the manufacture and/or use of DDT? What precautions, if any, should be taken when DDT is used about the home? What is the treatment, if any, for DDT intoxication?**

A. Harry Roller, M.D., Bristol, Vt.

ANSWER.—A case of DDT poisoning in a laboratory worker was described recently by V. B. Wigglesworth. The symptoms of DDT poisoning are (1) an acute neurologic syndrome characterized by hyperexcitability, generalized tremors and convulsions and (2) chronic injury to the liver. These have been described in experimental animals. DDT is absorbed by all routes of administration, including cutaneous absorption if applied in lipoid solvents. Analysis of the urine for organic chlorine as described by Smith or by the colorimetric method of Schechter and Haller in suspected cases of poisoning is of diagnostic value. Gastric lavage, saline cathartics to hasten elimination, and urethane, diphenylhydantoin sodium or phenobarbital to control the neurologic symptoms in acute poisoning are indicated. References:

Wigglesworth, V. B.: A Case of DDT Poisoning in Man, *Brit. M. J.* **1**: 517 (April 14) 1945.

Smith, M. I., and Stohlman, E. F.: The Pharmacologic Action of 2,2 bis (p-Chlorophenyl) 1,1,1 Trichlorethane and Its Estimation in the Tissues and Body Fluids, *Pub. Health Rep.* **59**: 984 (July 28) 1944.

Lillie, R. D., and Smith, M. I.: Pathology of Experimental Poisoning in Cats, Rabbits and Rats, with 2,2 bis (p-Chlorophenyl) 1,1,1 Trichloroethane, *Pub. Health Rep.* **59**: 979 (July 28) 1944.

Smith, M. I., and Stohlman, E. F.: Further Studies on the Pharmacologic Action of 2,2 bis (p-Chlorophenyl) 1,1,1 Trichloroethane (DDT) *Pub. Health Rep.* **60**: 289 (March 16) 1945.

Cameron, G. R., and Burgess, F.: The Toxicity of 2,2 bis (p-Chlorophenyl) 1,1,1 Trichlorocthane (DDT) *Brit. M. J.* **1**: 865 (June 23) 1945.

Woodard, G.; Nelson, A. A., and Calvery, H. O.: Acute and Subacute Toxicity of DDT (2,2 bis [p-Chlorophenyl] 1,1,1 Trichloroethane) to Laboratory Animals, *J. Pharmacol. & Exper. Therap.* **82**: 152 (Oct.) 1944.

Schechter, M. S., and Haller, H. L.: Colorimetric Tests for DDT and Related Compounds, *J. Am. Chem. Soc.* **66**: 2129 (Dec.) 1944.

CIRCUMCISION

To the Editor:—**What advantages if any are there in circumcision of the newborn? It seems to me that many more circumcisions are being done than are necessary. I have noticed that if these so-called "tight foreskins" are left alone they seem to be all right when the babies are about 7 months old.**

Guy C. Pesce, M.D., Watertown, Mass.

ANSWER.—The advantage of circumcision in the newborn is that it prevents the occurrence of many penile disturbances in later life, such as phimosis, paraphimosis and persistent balanoposthitis. In many hospitals circumcision is done almost as a routine procedure and it may be that many foreskins are needlessly sacrificed. It is a debatable question whether tight foreskins which are left alone do not cause any further disturbance.

EFFECT OF X-RAYS ON HYPERHIDROSIS

To the Editor:—**In Queries and Minor Notes in The Journal, Nov. 10, 1945, page 776, an inquirer concerning the value of x-ray therapy in hyperhidrosis was told that "the amount of x-ray therapy needed to control hyperhidrosis of the palms and soles is relatively large. The skin is probably damaged by it. When successful, there is often abnormal drying and changes more or less characteristic of a radiodermatitis. The latter may not appear until years later. This should be enough to decide against x-ray therapy. Dr. Joseph J. Eller and I agreed that the answer is erroneous and should be rectified because it may without good reason deter physicians from the use of x-rays in that condition. We are just preparing a paper on x-ray therapy in hyperhidrosis based on over 500 cases treated in the last twenty years. Our results indicate that, if properly given, x-ray therapy assures a beneficial effect on hyperhidrosis without causing any appreciable damage to the skin.**

Jonas Borak, M.D., New York.